NASA CR 137605

DOUGLAS MDC-J4484

ANALYSIS OF OPERATIONAL REQUIREMENTS FOR MEDIUM DENSITY AIR TRANSPORTATION

APPENDIX

VOLUME III
MARCH 1975

PREPARED UNDER CONTRACT NO. NAS2-8135
FOR
SYSTEMS STUDIES DIVISION
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MOFFETT FIELD, CALIFORNIA 94035

DOUGLAS AIRCRAFT COMPANY

MCDONNELL DOUGLAS CORPORATION

NASA CR 137605
DOUGLAS MDC-J4484

ANALYSIS OF OPERATIONAL REQUIREMENTS FOR MEDIUM DENSITY AIR TRANSPORTATION

APPENDIX
VOLUME III
MARCH 1975

Prepared Under Contract No. NAS2-8135
for
SYSTEMS STUDIES DIVISION
NATIONAL AERONAUTICS AND SPACE ADMINISTRATION
MOFFETT FIELD, CALIFORNIA 94035

FOREWORD

This Volume III contains the supporting data to Volume II, Final Report, of a contracted study performed for NASA, "Analysis of Operational Requirements for Medium Density Air Transportation", by the Douglas Aircraft Company, McDonnell Douglas Corporation.

The NASA Technical Monitors for the study were Thomas L. Galloway and Susan N. Norman, Systems Studies Division, Ames Research Center, Moffett Field, California.

The Douglas Study Team consisted of J. Seif, Technical Director, assisted by M. A. Sousa, responsible for Aircraft Analysis, and S. C. Nelson, responsible for Systems Operations and Economic Analysis. The following personnel contributed to the study effort in the disciplines as indicated:

Acoustics	:	J. J. Heffernan
Aerodynamics	:	R. D. Walls, J. H. Lindley
Economics	:	J. C. Van Abkoude
Environment	:	L. H. Quick
Manufacturing	:	F. J. Mikkelsen
Market	:	G. R. Morrissey
Power Plant	:	F. S. LaMar
Weights	:	B. W. Kimoto, J. L. Weinberg

The subcontractor participation included the following companies and personnel:

Air California	:	F. R. Davis
American Airlines	:	J. D. Graef
Cessna Aircraft	:	O. D. Mall
North Central Airlines	:	C. B. Vesper

Appreciation for their cooperation and contribution is extended to:

Avco Lycoming Division
Avco Corporation

Detroit Diesel Allison Division
General Motors Corporation

General Electric Company
Aircraft Engine Group

Hamilton Standard Division
United Aircraft Corporation

The nine month study, initiated in March 1974, was divided into three tasks: Task I - Aircraft Requirements; Task II - Aircraft Design Study; and Task III - Evaluation.

The final report for this study is presented in three volumes as follows:

Volume I Summary	-	A summary of the significant study results
Volume II Final Report	-	A detail description of the study and results
Volume III Appendix	-	The supporting study data, methods, and analyses.

TABLE OF CONTENTS

APPENDIX A - AIRCRAFT

LIST OF FIGURES

LIST OF TABLES

APPENDIX A — AIRCRAFT

A.1 PERFORMANCE ANALYSIS METHODS AND GROUNDRULES

A.1.1 Aircraft Sizing

The sizing process is illustrated by figure A-1. Thrust-to-weight and wing loading combinations which satisfy the takeoff and landing field length requirements together with parametric weight data (OEW = f(TOGW, W/S, T/W)), installed thrust and tail sizing information are used as inputs to a computer program which performs the aircraft sizing calculations. A typical mission profile used for airplane sizing is shown in figure A-2.

A.1.2 Takeoff

STOL takeoff performance was estimated by calculating the time history of the takeoff flight path. This method allows for recognition of changes in aerodynamic characteristics and flight limitations which occur during the maneuver. The calculations are governed by the following assumptions:

1. The aircraft is assumed to be a point mass, i.e., second-order rotational dynamics have been ignored and the analysis is essentially two dimensonal.
2. The forces acting on the aircraft are summed in the longitudinal and normal directions and are a function of true airspeed, flight path angle, angle of attack and height above the ground.
3. Any restriction on speed, acceleration, attitude, etc., may be imposed as desired.
4. The path is generated by numerical integration of the forces acting on the aircraft over small increments in time using a digital computer.

Based on FAR Part 25 requirements, takeoff field length was defined as the greater of:

AIRCRAFT SIZING PROCESS

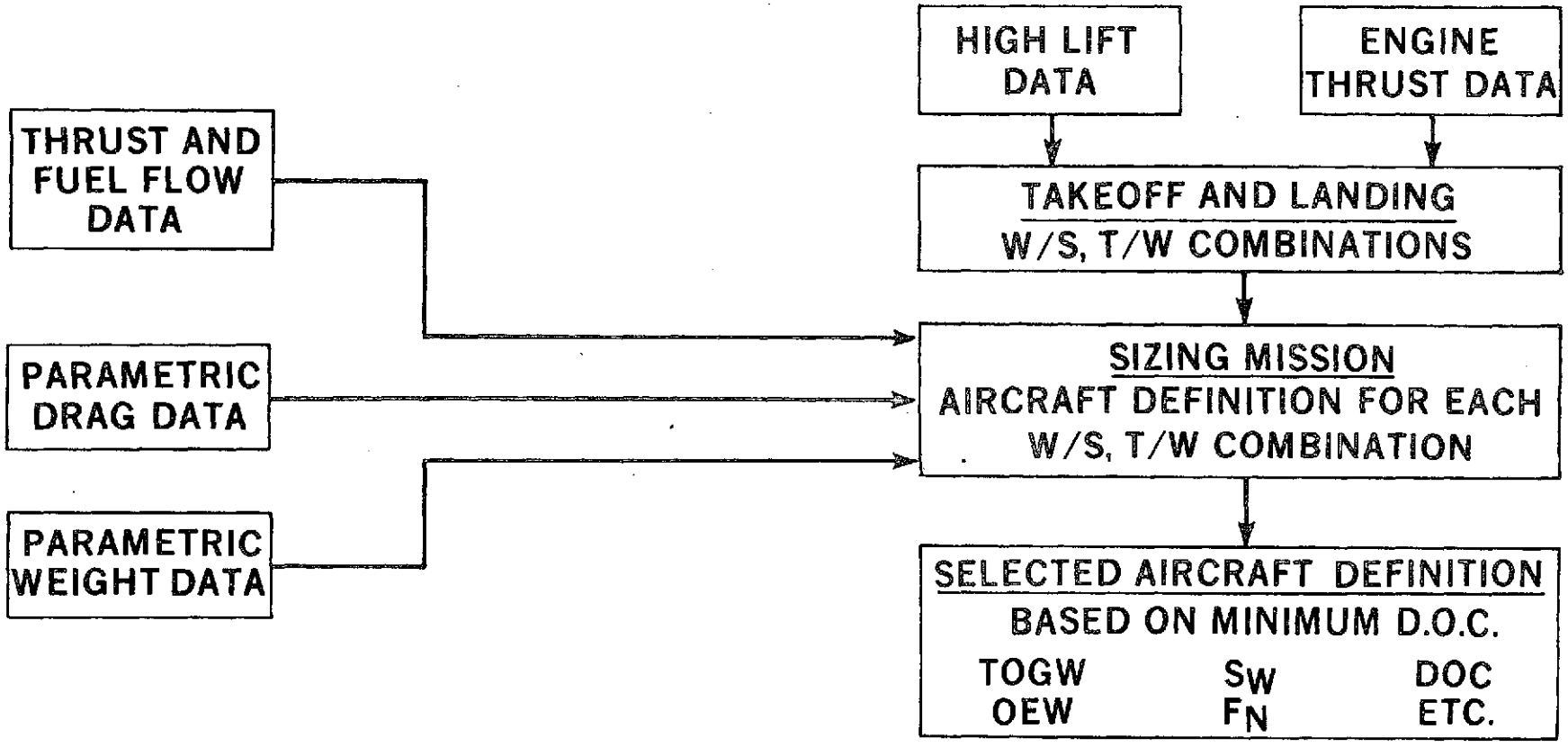
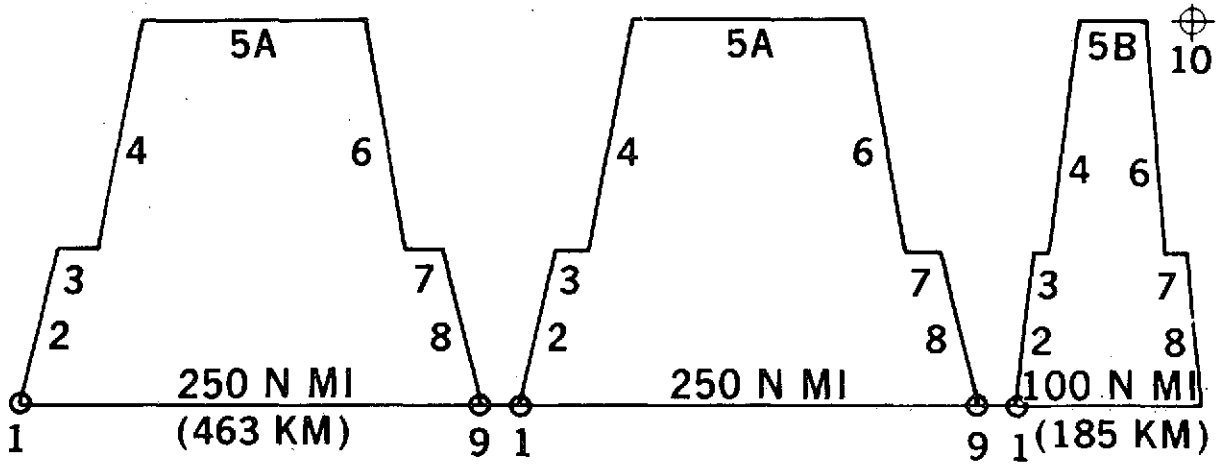


FIGURE A-1

SIZING MISSION PROFILE



1. TAXI-OUT (3 MINUTES) AND TAKEOFF AND ACCELERATE TO BEST CLIMB SPEED (2 MINUTES)
2. CLIMB AT 250 KIAS (129 M/S) TO 10,000 FT (3048 M)
3. ACCELERATE TO CLIMB SPEED
4. CLIMB AT 300 KIAS (154 M/S) TO CRUISE ALTITUDE

5A. CRUISE AT MAX MACH NO. AT $\leqslant$ 25,000 FT (7620 M)

5B. CRUISE AT 99 PERCENT MAX SPECIFIC RANGE

6. DESCEND TO 10,000 FT (AT FLIGHT IDLE, INCL 300 KIAS PRESSURIZATION CABIN RATE LIMITED DESCENT).
7. DECELERATE TO 250 KIAS
8. DESCEND AT 250 KIAS TO S.L.
9. APPROACH AND LAND (3 MINUTES) AND TAXI-IN (2 MINUTES)
10. HOLD (45 MINUTES) AT MAX ENDURANCE

FIGURE A-2.

1. 1.15 x all-engine takeoff distance to 35 feet (10.7 m) height.

2. Distance to 35 feet (10.7m) height with critical engine failure at V_1.

3. Distance to accelerate to V_1 and then decelerate to a stop.

The following constraints were used in calculating the takeoff field lengths for the final design aircraft.

1. Rolling friction, $\mu = 0.025$.

2. Fuselage angle of attack $\leq$ ground limit = 15°.

3. Rotation rate, $\theta \leq 5°/sec$.

4. $C_L \leq 90\%$ of $C_{L_{max}}$ out of ground effect.

5. $C_L \leq 100\%$ of $C_{L_{max}}$ in ground effect.

6. No deceleration during air run to 35 feet (10.7m) height.

7. Early rotation at a speed of 5 knots (2.57 m/sec) less than the design rotation speed will not result in an increase in the one-engine-out takeoff distance.

8. Accelerate-stop distance based on one second delay to recognize an engine failure at V_1 plus a three second delay to initiate braking followed by a deceleration of 0.425g to a stop.

9. Second segment climb gradient (at V_2, with takeoff flap setting, critical engine inoperative, gear up and out of ground effect)

$\geq$ 3.0% for four-engine aircraft

2.4% for two-engine aircraft

A.1.3 Landing

The methods and assumptions used in calculating landing field lengths are essentially the same as those used for takeoff performance. The landing maneuver consists of three segments; approach, flare and ground roll as shown in figure A-3. Landing field length is defined as the landing distance over a 50-foot (15.2 m) obstacle divided by a 0.6 factor, i.e., a 4500-foot (1372 m) field length requires a landing distance of 2700 feet (823 m).

LANDING FIELD LENGTH DEFINITION

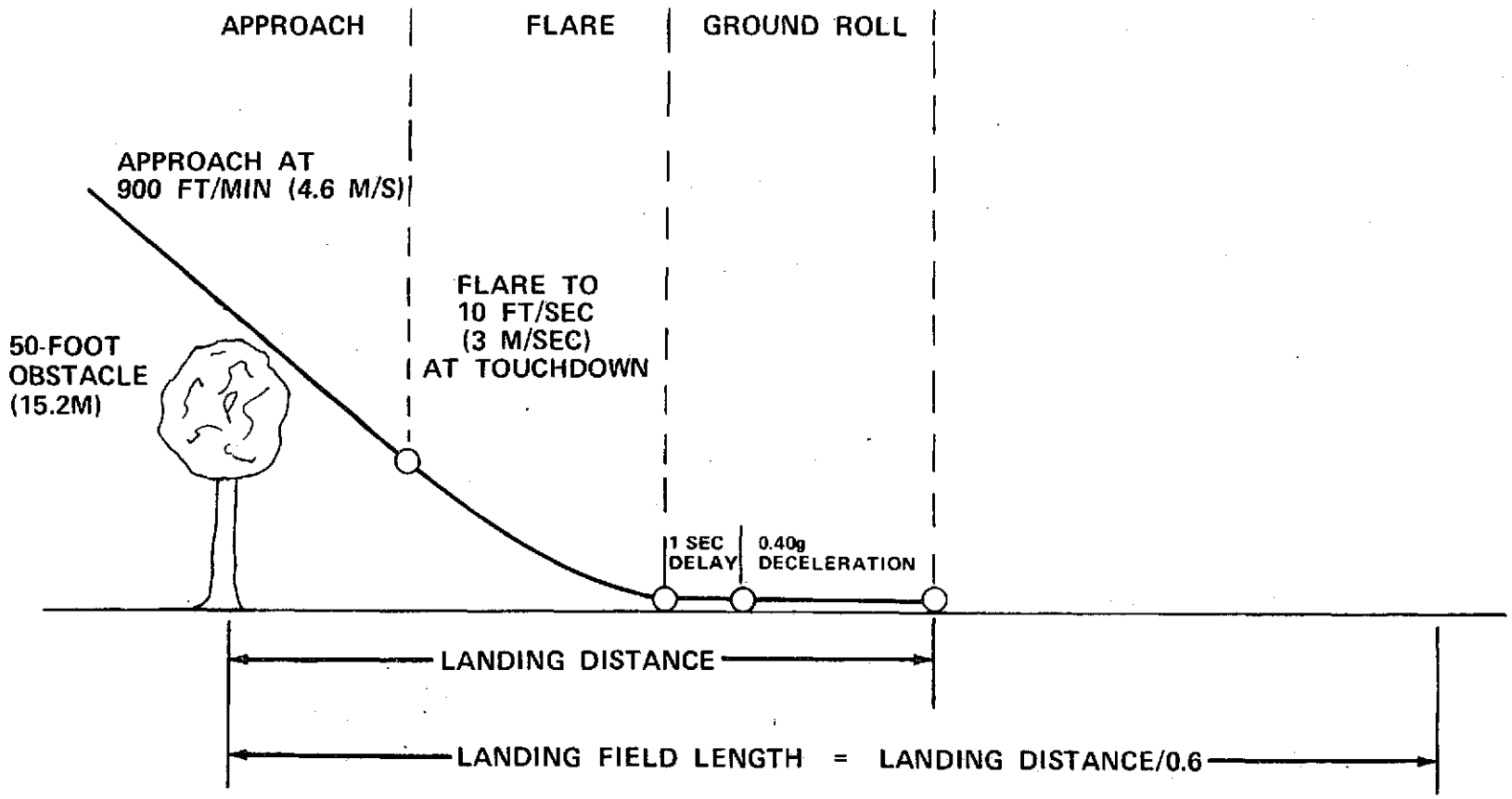


FIGURE A-3.

The approach conditions were:

1. 1.3 V_{min} approach speed at 50° (0.873 rad) flap setting.
2. 900 fpm (4.57 m/sec) approach sink rate.

The flare maneuver was performed by rotating the aircraft 5°/sec (0.087 rad/sec) starting at the flare height. As the aircraft approaches the ground C_L and C_D tend to diminish due to ground effect. The flare height was selected to yield a touchdown sink rate of 10 fps (3 m/sec).

The ground roll consists of one second at constant speed from touchdown to deceleration device effectiveness followed by a constant deceleration of 0.40g to a stop. Landing, like takeoff, was calculated for sea level, 90°F (32.2°C) conditions.

A.1.4 Mission

The mission calculations, for the mission profile previously shown in Section A.1.1, figure A-2, are performed in a computer program specifically developed by Douglas Aircraft Company during the last five years for the sizing of aircraft in the advanced design stage. The methods used are essentially those of classical airplane performance. The computer program calculates 2 degrees-of-freedom mission time histories, iterating on weight, thrust, drag and tail sizing data to determine such characteristics as TOGW, wing area, engine size, OEW, fuel burned, etc. of an aircraft which satisfies the requirements of the mission profile with the desired payload.

Cruise altitude, not exceeding 25,000 feet (7620 m), and climb Mach number were optimized to minimize DOC. Mission performance was calculated for standard day conditions.

A.2 AERODYNAMIC CHARACTERISTICS

A.2.1 High Lift Configuration Aerodynamic Characteristics

A.2.1.1 Nominal High-Lift System — Turbofan Aircraft

The nominal flap aircraft utilize the DC-9-30 leading edge slat and trailing edge flap concept; see figure A-4. Basic DC-9-30 longitudinal high-lift characteristics were adjusted to a lower quarter chord sweep of 5 degrees (0.087 rad) using Douglas developed analytical and empirical methods. Differences in flap effected area and wing aspect ratio between the DC-9-30 and the nominal flap aircraft were small and offsetting, so were neglected. The estimated out-of-ground effect longitudinally trimmed lift-and-drag characteristics for the nominal flap aircraft are presented in figure A-5. The maximum lift coefficients for determining the 1g and V_{min} stall speeds are presented in table A-1. The estimated engine-out lateral-directonal trim increments used in the performance analysis are based on Douglas-derived analytical and empirical methods which have shown good correlation with flight test data. The equation form used for calculating these increments is shown below in table A-2.

A.2.1.2 Nominal High-Lift System — Turboprop Aircraft

The basic high-lift configuration consists of a full span slat and double slotted trailing edge flap similar to that used on the turbofan nominal flap configuration, Section A.2.1.1. Low speed aerodynamic power effects were estimated from Datcom analytical methods and applicable wind tunnel data, which were used to refine the Datcom methods to apply more specifically to the particular turboprop configuration for this study. The refined methods account for engine-out span load distortions which produce a loss of powered lift efficiency and increased induced drag at a given level of lift.

PREPARED BY: _____
DATE: 4/10/74
REVISED _____

DOUGLAS

PAGE NO. _____
MODEL _____
REPORT NO. _____

NOMINAL DC-9-30 TYPE HIGH LIFT SYSTEM

SUPER CRITICAL WING NOT REPRESENTED

$(C_F/C)_{NESTED} \cong .30$

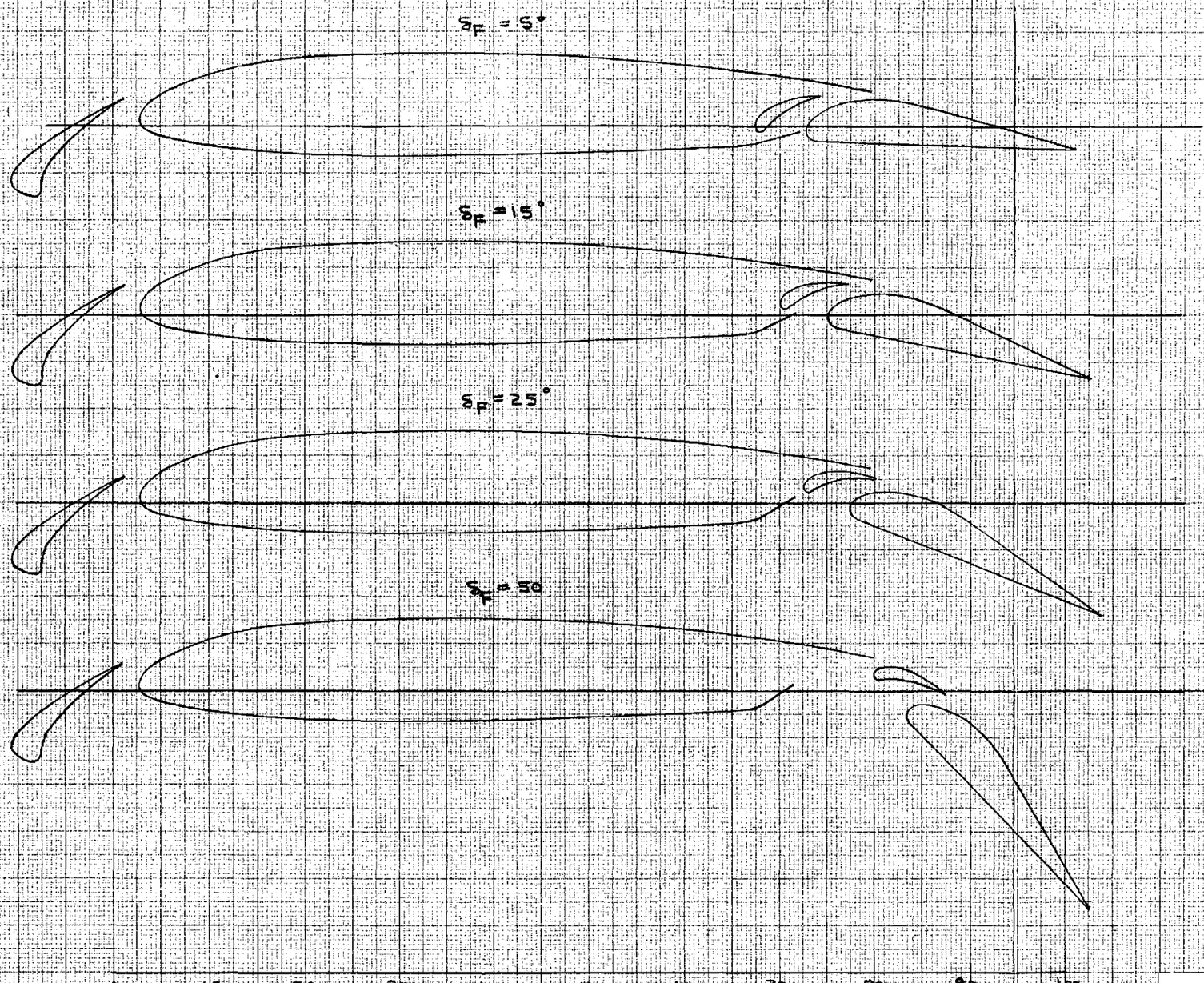


FIGURE A-4

FOLDOUT FRAME 1

FOLDOUT FRAME 2

PREPARED BY: [illegible]
DATE: 4/2/73
REVISED

DOUGLAS

PAGE NO.
MODEL
REPORT NO.

NOMINAL FLAP - BASELINE, 50 PASSENGER TURBOFAN
TRIMMED LIFT AND DRAG CHARACTERISTICS
FULL SPAN LEADING EDGE SLAT
ADJUSTED TO FLT. REYNOLDS NO.
GEAR DOWN, CG = .25 MAC

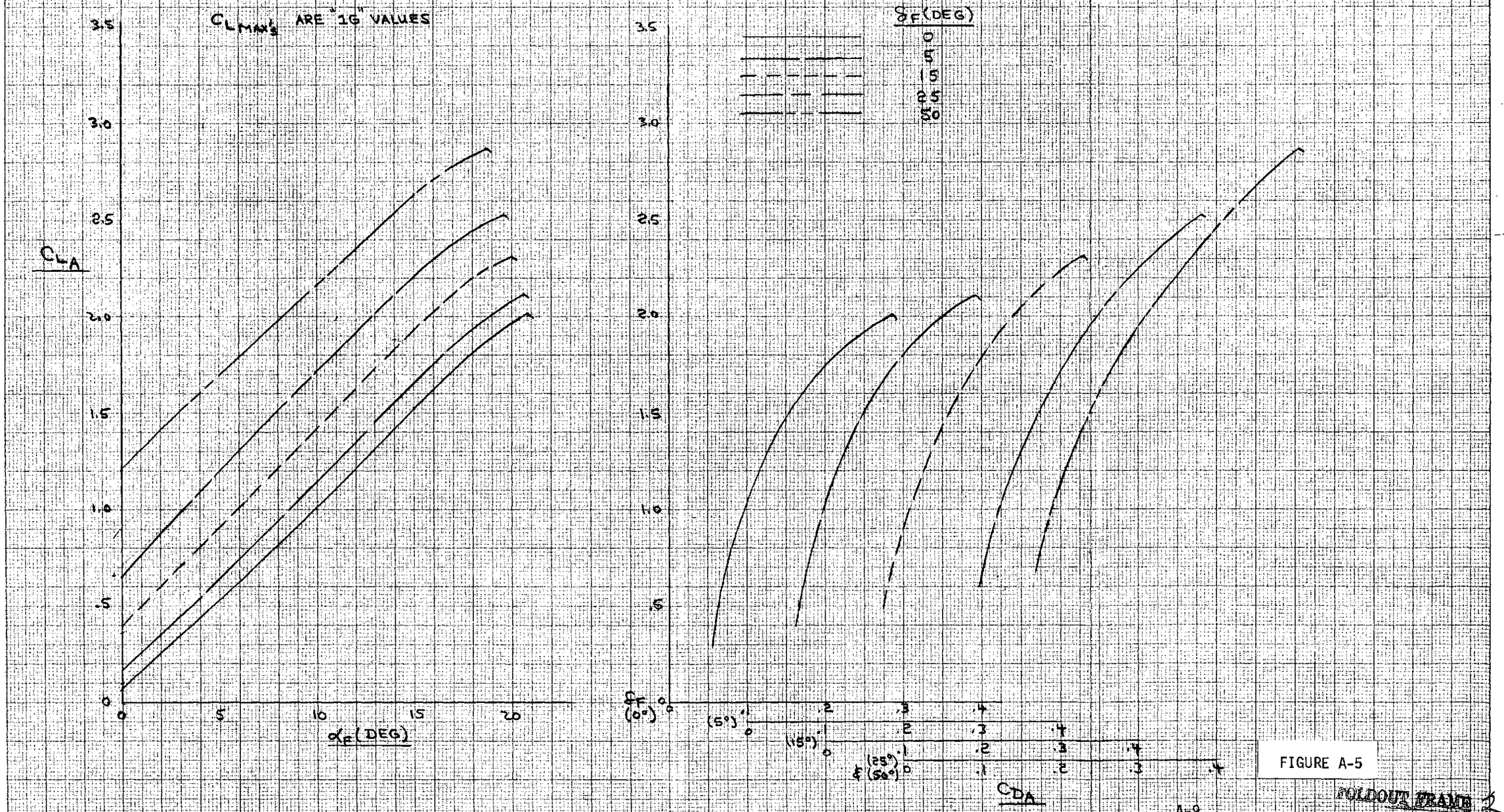


FIGURE A-5

FOLDOUT FRAME

FOLDOUT FRAME

TABLE A-1

NOMINAL HIGH LIFT SYSTEM, MAXIMUM LIFT COEFFICIENTS

FLAP ANGLE (degrees/radians)	$C_{L_{M_{ig}}}$	$C_{L_{M_{vmin}}}$
0/0	2.01	2.08
5/0.087	2.11	2.24
15/0.262	2.32	2.46
25/0.436	2.52	2.63
50/0.873	2.87	3.00

TABLE A-2

ENGINE-OUT LATERAL-DIRECTIONAL TRIM INCREMENTS-TURBO-AN AIRCRAFT

$$\Delta C_{D_{trim}} = 0.00012 \times \left(\frac{\Delta f_{\substack{\text{WIND-MILLING} \\ \text{JET}}}}{S_w} + \frac{FN_{ASSYMETRIC}}{q_\infty \times S_w} \right)^2$$

where:

$\Delta C_{D_{trim}}$ = lateral-directional trim increment due to an engine failure

$\Delta f_{\substack{\text{WIND-MILLING} \\ \text{JET}}}$ = parasite drag area due to a wind-milling engine

$FN_{ASSYMETRIC}$ = net thrust of engine which is contributing assymetric thrust for an engine failed condition

q_∞ = freestream dynamic pressure $\left(\frac{1}{2} \rho V_\infty^2\right)$

S_w = reference wing area

The basic aircraft configuration can be trimmed laterally, engine-out, with lerons alone; i.e., without the use of spoilers. Therefore, the lateral rectional trim effects consist entirely of drag increments. The resulting teral-directional trim drag increments were reduced to an equation form, own in table A-3 and applied to the longitudinally trimmed engine-out aerodynamic ta. Figures A-6 through A-15 show the longitudinally trimmed aerodynamic data the turboprop aircraft.

.1.3 Simple High-Lift System

The basic concept of the simplified high-lift system is the elimination of leading-edge slat from the nominal high-lift system, which is described in tion A.2.1.1.

Due to the simplified method which sufficed for evaluating the merits of the ple high-lift system, only the maximum lift coefficients were required for s system. These values are presented in table A-4 for both 1g and V_{min} stall ditions.

.1.4 Advanced High-Lift System

The advanced flap aircraft incorporate a high-lift system that provides for d increments in lift at a fixed angle of attack, high lift-to-drag ratios ecially at takeoff and climb-out flap settings, and high values of maximum t coefficient. In order to achieve these requirements a track mounted flap h considerable aft extension with flap deflection is required. The following a basic description of the high-lift system:

1. Trailing-edge flaps are track mounted, two-segment, double-slotted flaps employing considerable aft extension with flap deflection; see figure A-16.
2. The nested flap chord is 35% of the wing chord.
3. The trailing-edge flap is continuous spanwise from the fuselage to the aileron.

TABLE A-3

ENGINE-OUT LATERAL-DIRECTIONAL TRIM INCREMENTS-TURBOPROP AIRCRAFT

$$\Delta C_{D_{engine\text{-}out}} = \left(-0.0013 + 0.0001 \times \delta_F\right) \alpha + \left(0.12 + 0.001 \times \delta_F\right) \times T_c$$

where:

$\Delta C_{D_{engine\text{-}out}}$ = lateral-directional trim increment due to an engine failure

δ_F = flap angle, degrees

α = aircraft angle of attack, degrees

T_c = net thrust coefficient $\left(\frac{\text{aircraft net thrust}}{q_\infty S_w}\right)$

DOUGLAS

REVISED

DATE 7-12-74

REPORT NO.

PAGE NO.

PREPARED BY: KDW

MODEL

REFERENCE

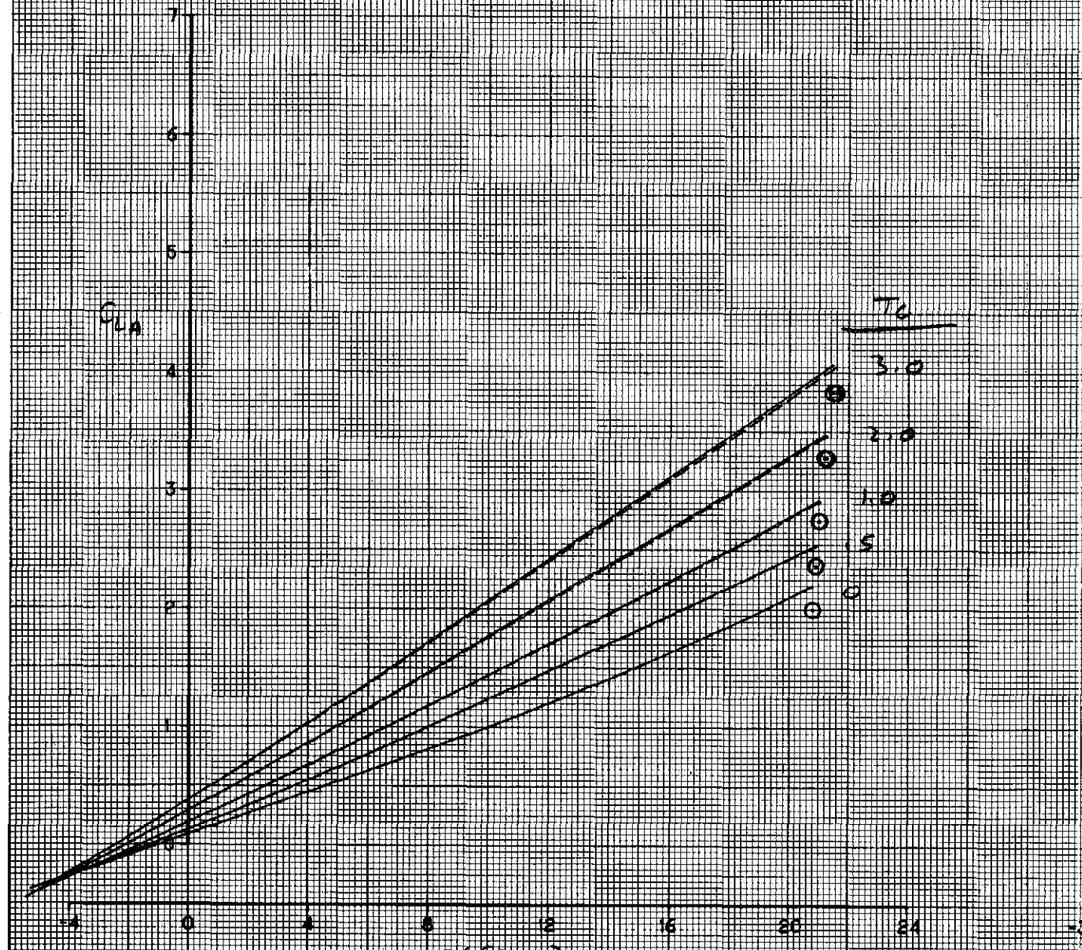
TURBOPROP HIGH-LIFT, TWO ENGINE, NOMINAL FLAP, 0°

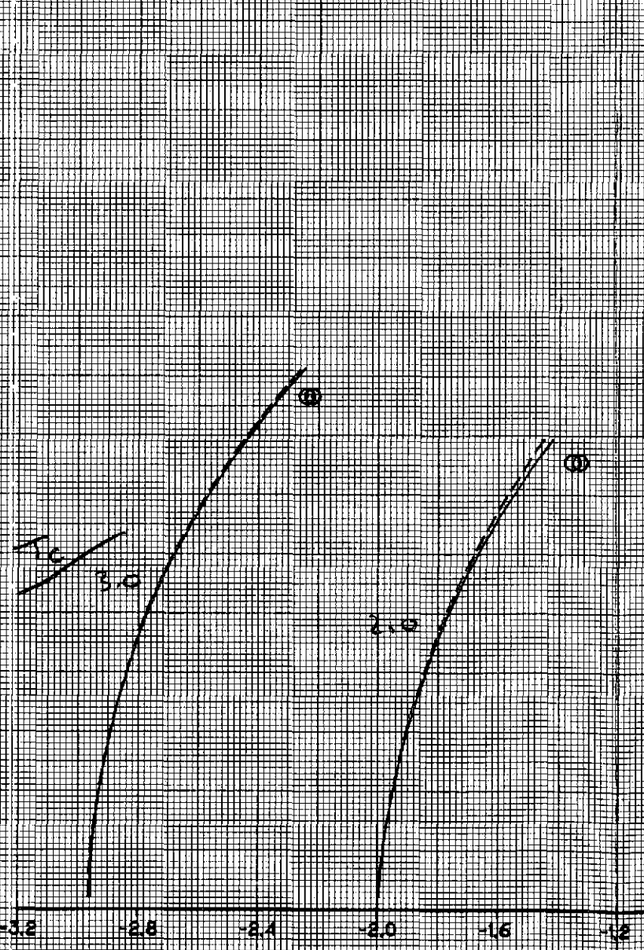
BOTH ENGINES OPERATING
FULL SPAN LEADING EDGE SLAT
GEAR DOWN, c_5 @ 25% $\bar{c}$

$\bar{V} = 3.9°$ ($\delta_F = 0°$)

Nominal Flap

——— AR = 9.0
– – – AR = 10.5





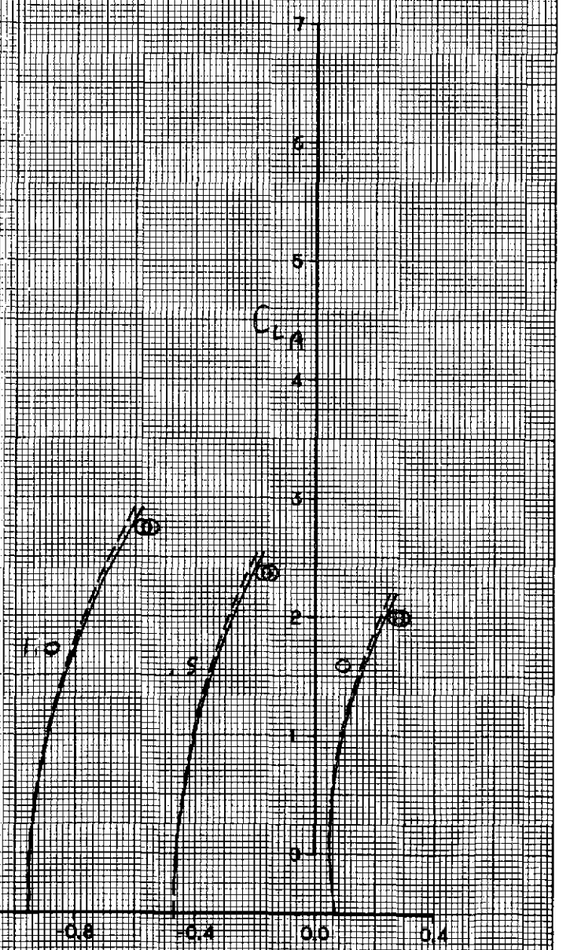


FIGURE A-6

FOLDOUT FRAME

FOLDOUT FRAME

DOUGLAS

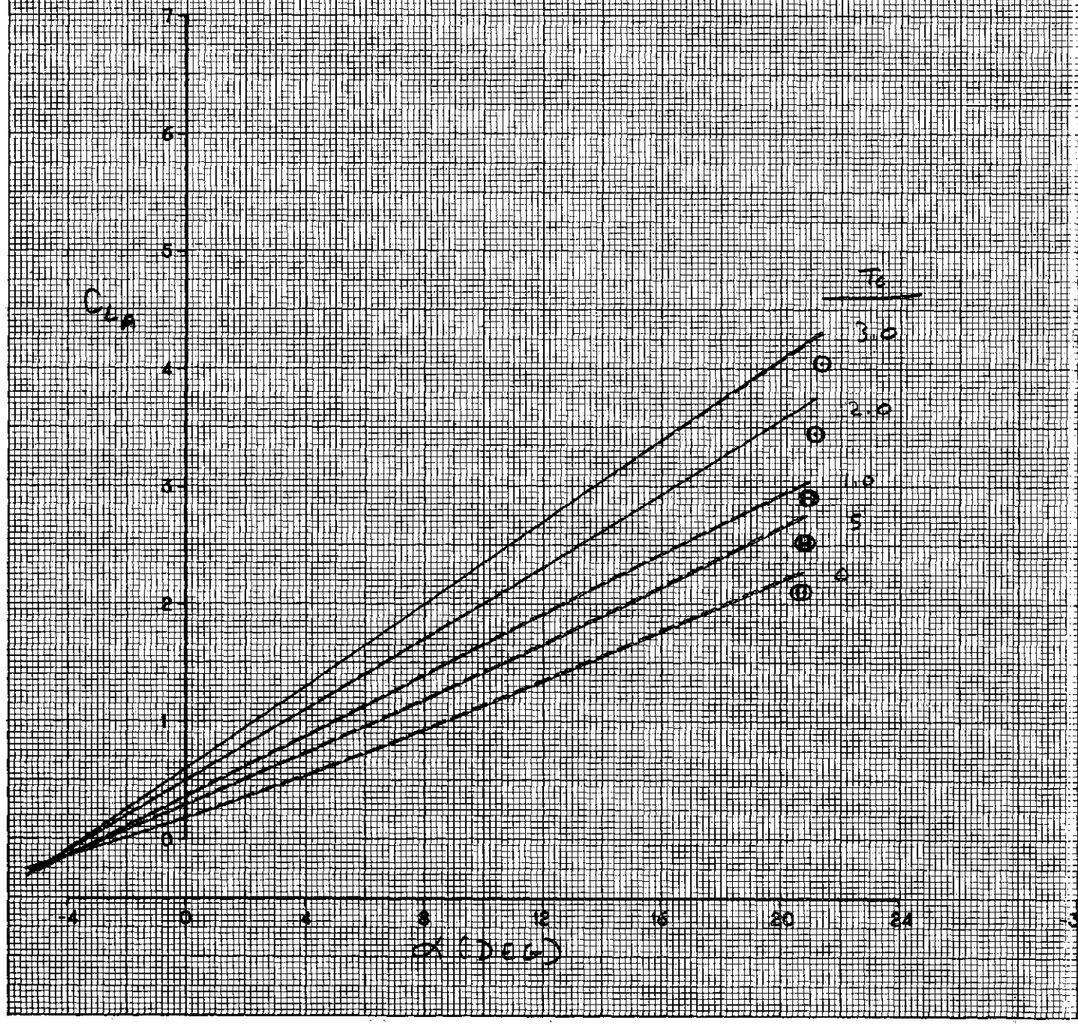
REPORT NO. _____ REVISED _____
PAGE NO. _____ DATE 7-12-74
MODEL _____
PREPARED BY: BDW
REFERENCE _____

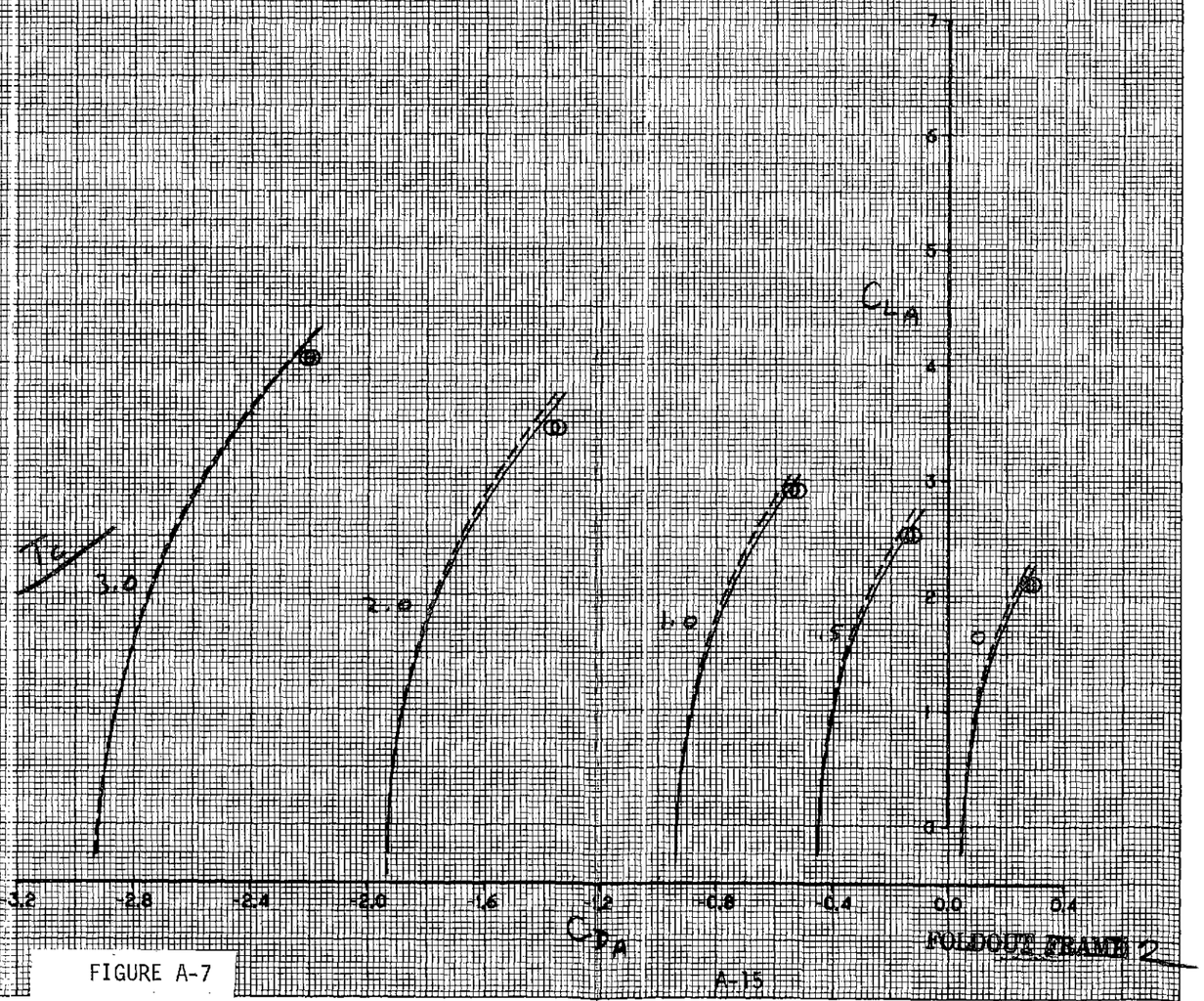
TURBOPROP HIGH-LIFT, TWO ENGINE, NOMINAL FLAP, 5°

BOTH ENGINES OPERATING
FULL SPAN LEADING EDGE SLAT
GEAR DOWN, C_g @ 25% $\bar{c}$
$i_w = 6°$ ($\delta_f = 5°$)

Nominal Flap

——— AR = 9.0
– – – – AR = 10.5





FOLDOUT FRAME 2

FIGURE A-7

(REV. 6-71)

DOUGLAS

REPORT NO. _____ REVISED _____

PAGE NO. _____ DATE 7-12-74

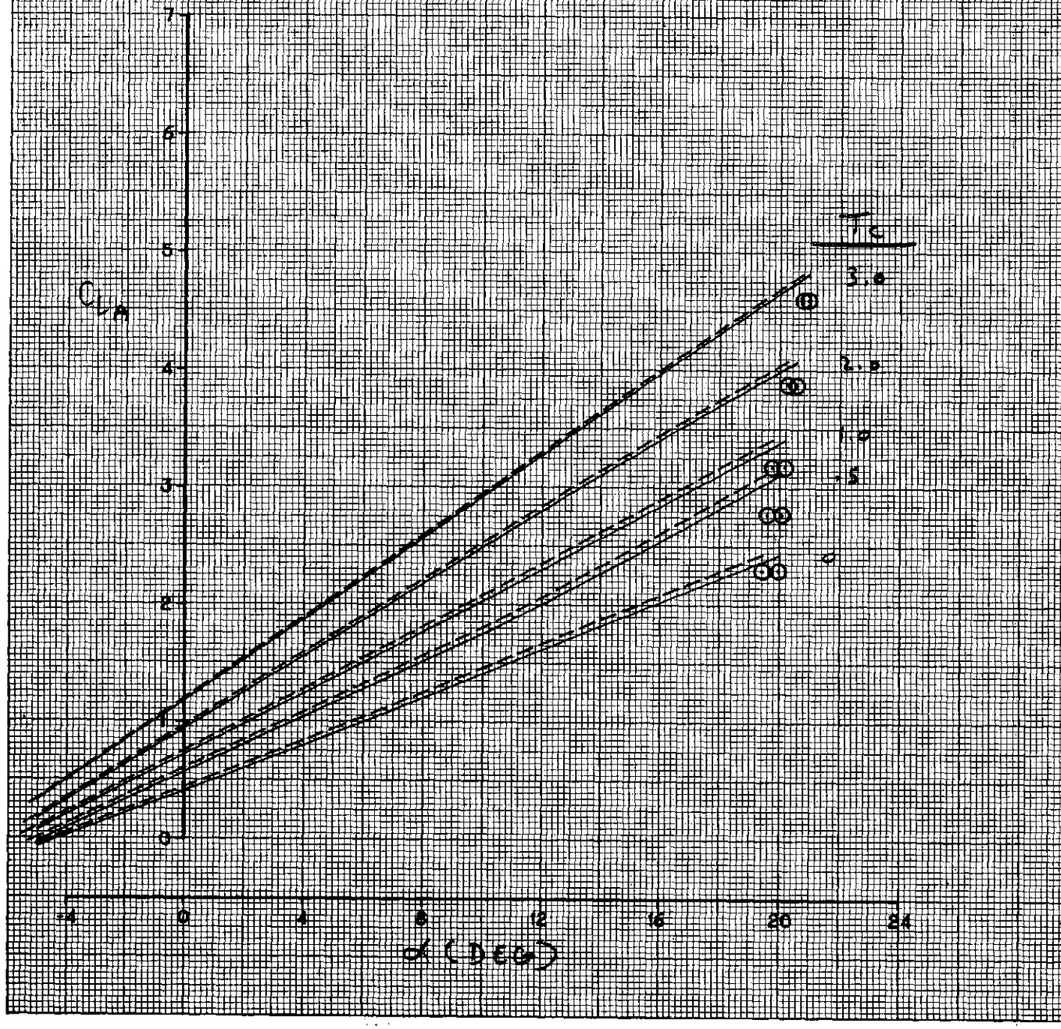
PREPARED BY: RDW MODEL _____

REFERENCE _____

TURBOPROP HIGH-LIFT, TWO ENGINE, NOMINAL FLAP, 15°
BOTH ENGINES OPERATING
FULL SPAN LEADING EDGE SLAT
GEAR DOWN, C_g @ 25% $\bar{c}$
$\gamma = 10.4°$ ($\delta_f = 15°$)

Nominal Flap

AR = 9.0
AR = 10.5



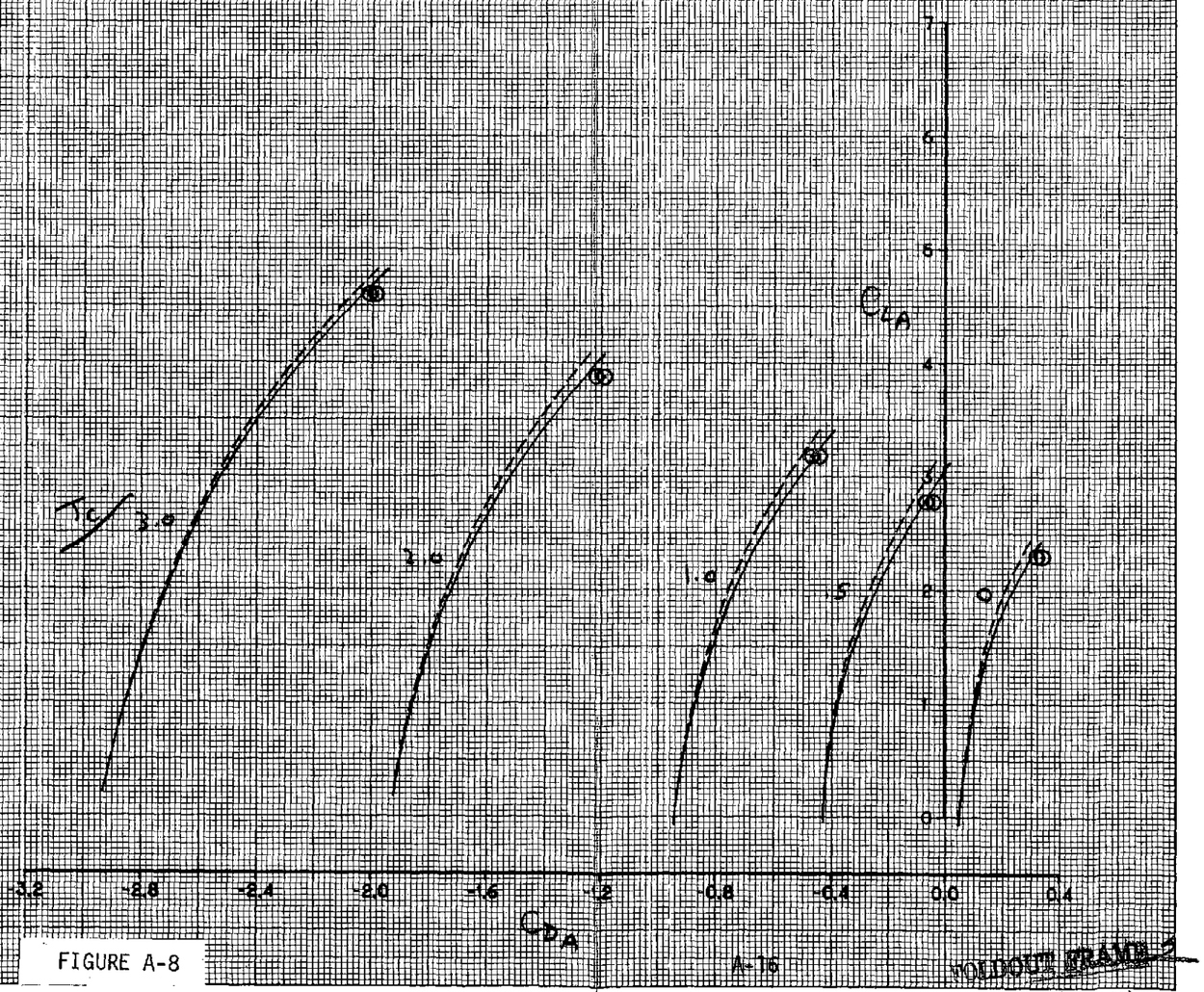


FIGURE A-8

VOUGHT FRAME 2
(REV. 8-71)

DOUGLAS

REVISED

DATE 7-17-74

REPORT NO.

PAGE NO.

MODEL

PREPARED BY: RDW

REFERENCE

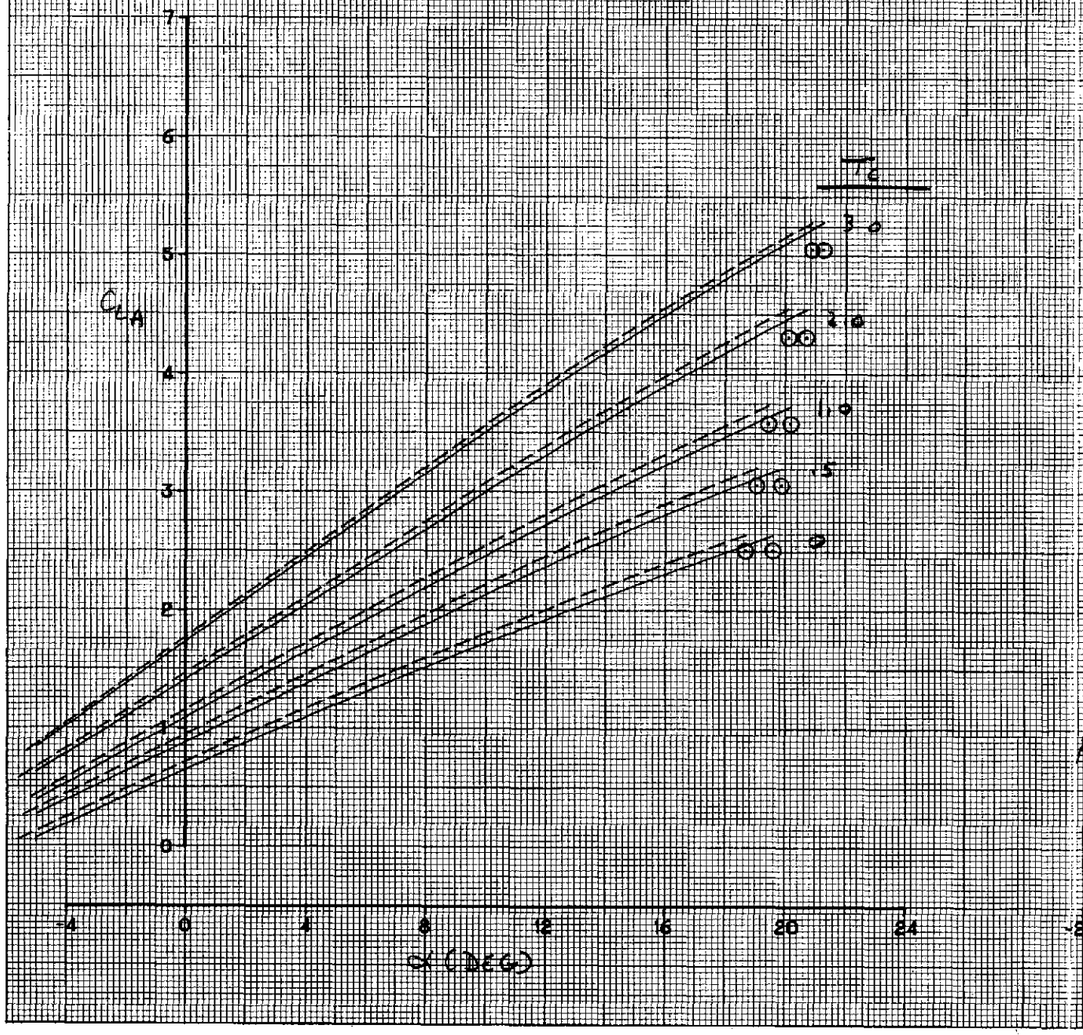
TURBOPROP HIGH-LIFT, TWO ENGINE, NOMINAL FLAP, 25°

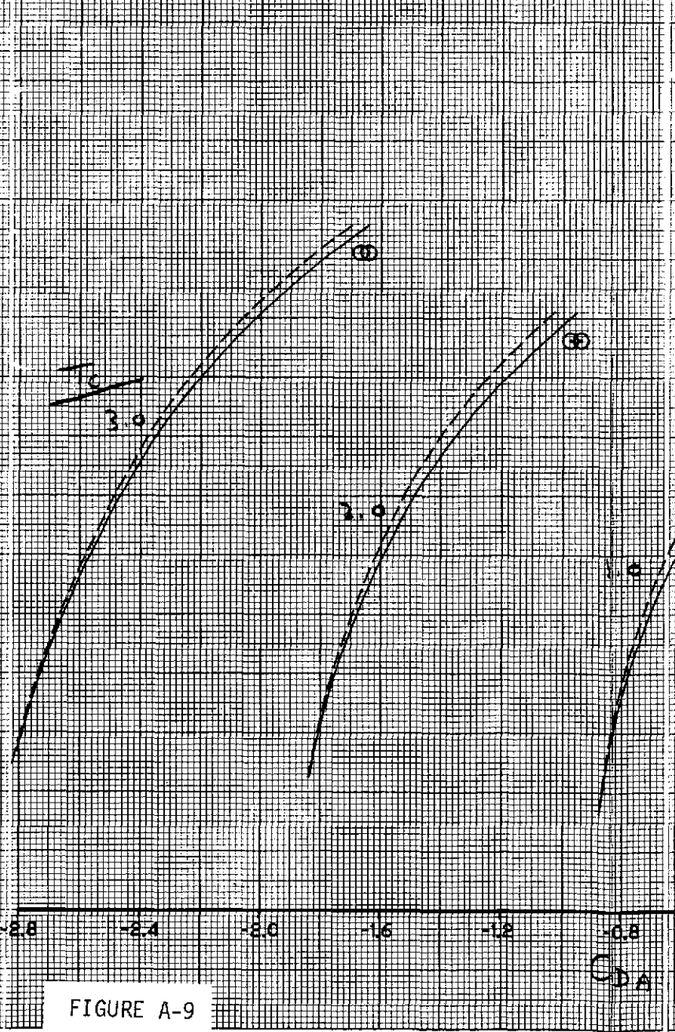
BOTH ENGINES OPERATING
FULL SPAN LEADING EDGE SLAT
GEAR DOWN, $C_{g_{CG}}$ @ 25% $\bar{c}$

$V = 142°$ ($\delta_f = 25°$)

Nominal Flap

——— AR = 9.0
— — — AR = 10.5





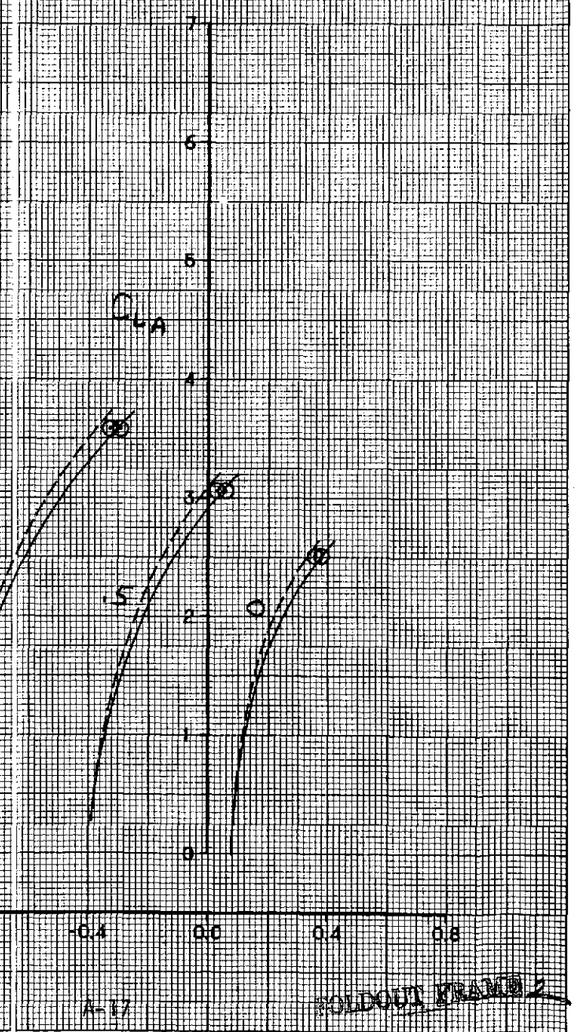


FIGURE A-9

T FRAME

FOLDOUT FRAME 2

A-17

(REV. 8-71)

DOUGLAS

REVISED
DATE 7-12-74
REPORT NO.
PAGE NO.
MODEL
PREPARED BY: RDW
REFERENCE

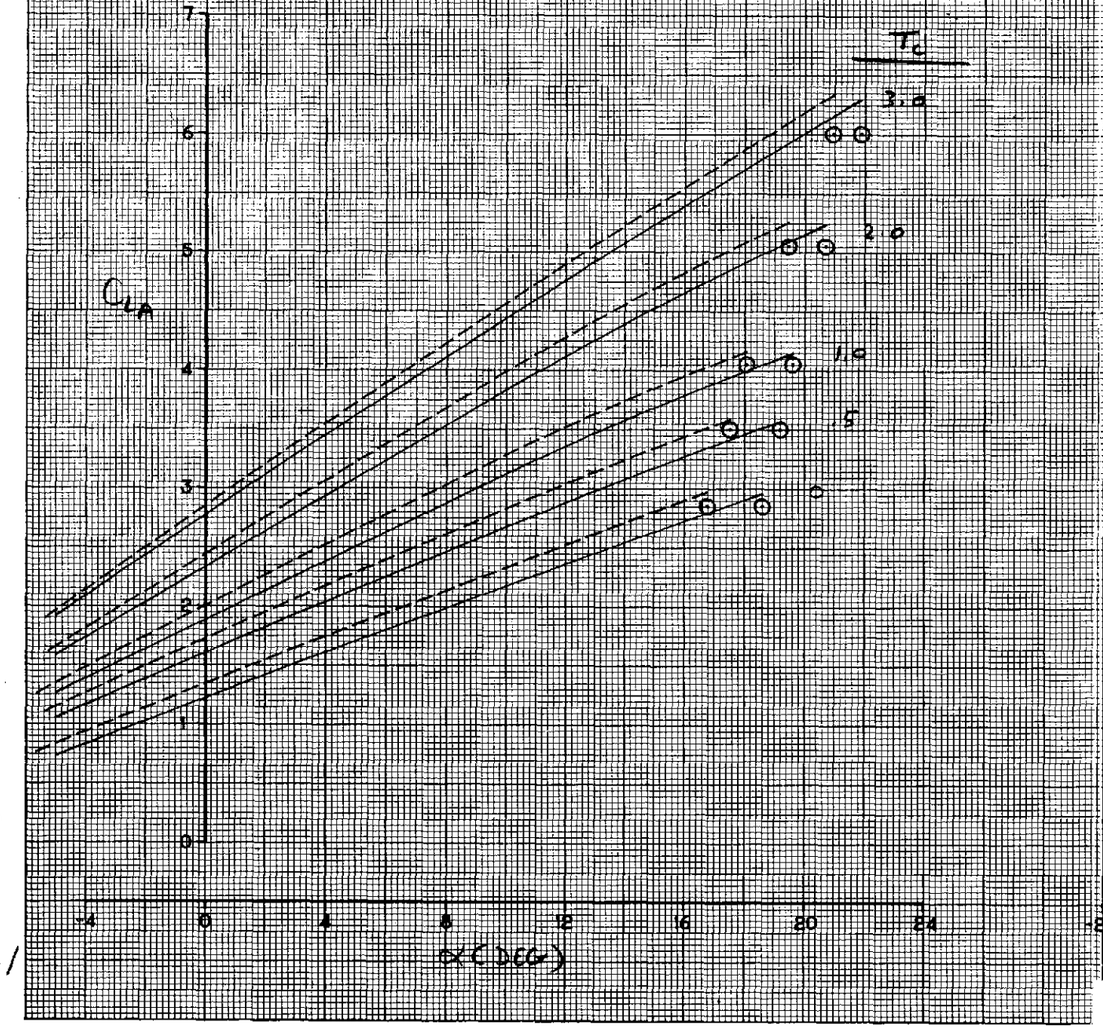
TURBOPROP HIGH-LIFT, TWO ENGINE, NOMINAL FLAP, 50°

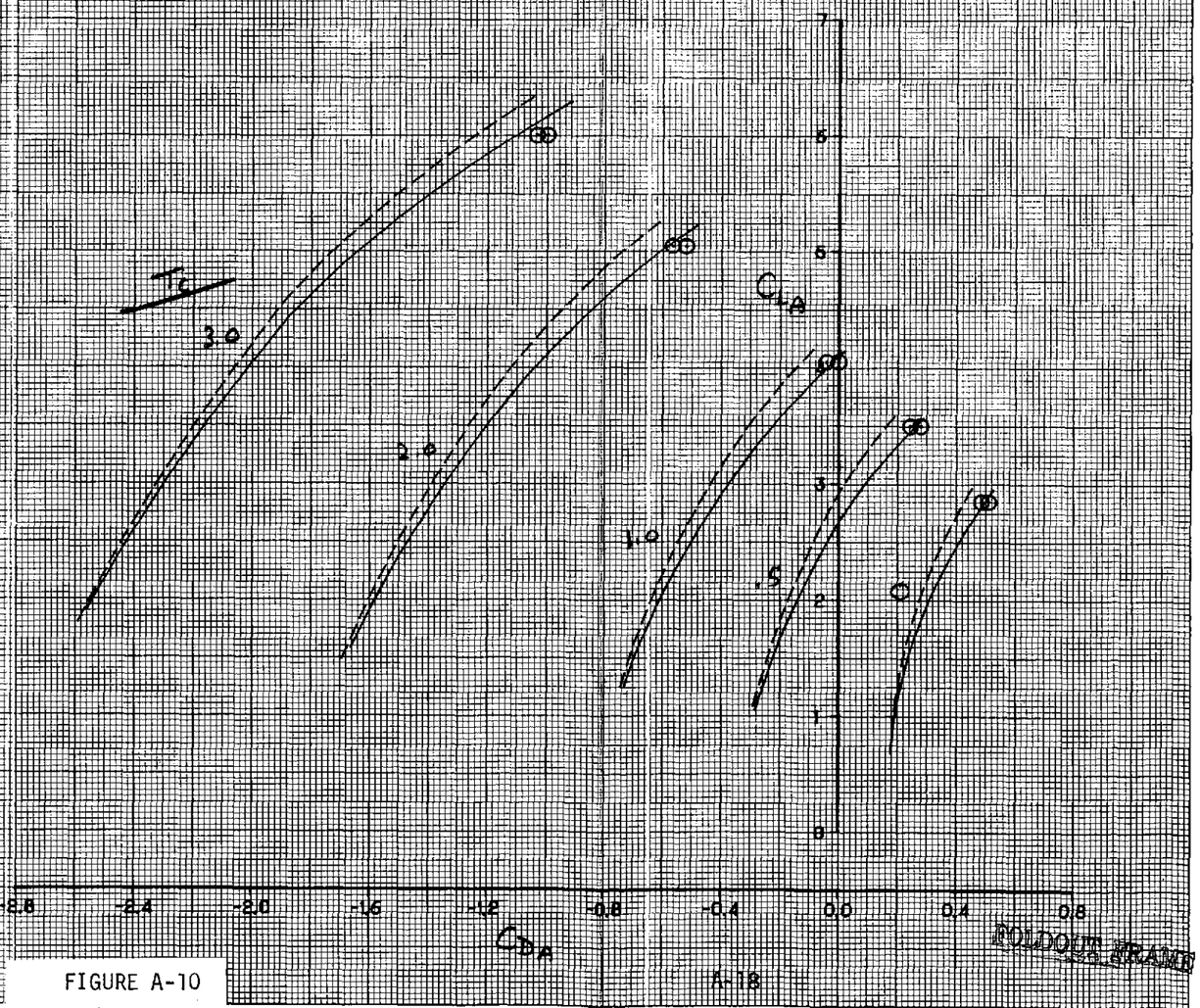
BOTH ENGINES OPERATING
FULL SPAN LEADING EDGE SLAT
GEAR DOWN, C.G. @ 25% $\bar{c}$

$\alpha = 22°$ ($\delta_f = 50°$)

Nominal Flap

—— AR = 9.0
— — AR = 10.5





FOLDOUT FRAME 1

FOLDOUT FRAME 2

FIGURE A-10

(REV. 6-71)

DOUGLAS

PREPARED BY: RDW MODEL REPORT NO.
REFERENCE PAGE NO.
REVISED DATE: 2-17-74

TURBOPROP HIGH-LIFT ONE ENGINE, NOMINAL FLAP, 0°

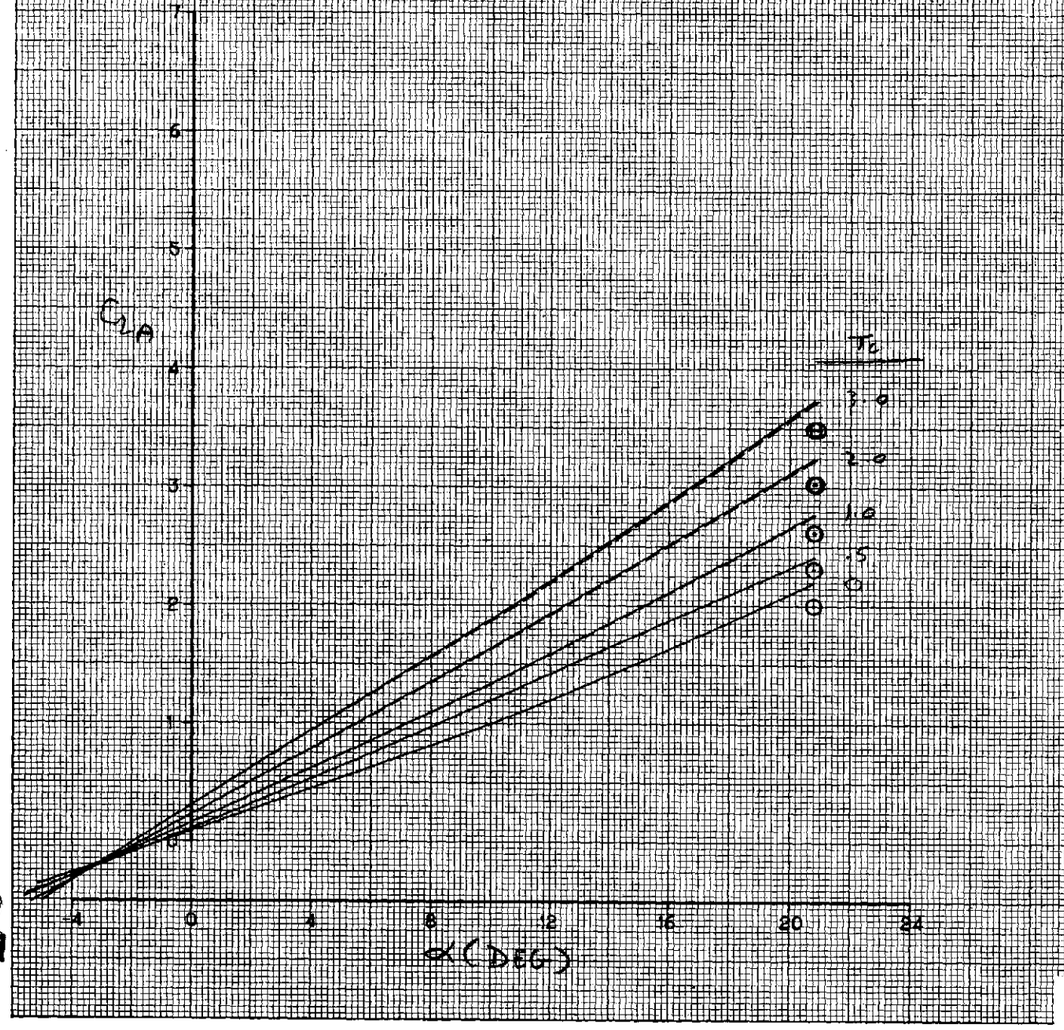
ONE ENGINE OPERATING
FULL SPAN LEADING EDGE SLAT
GEAR DOWN, C.G. @ 25% $\bar{c}$

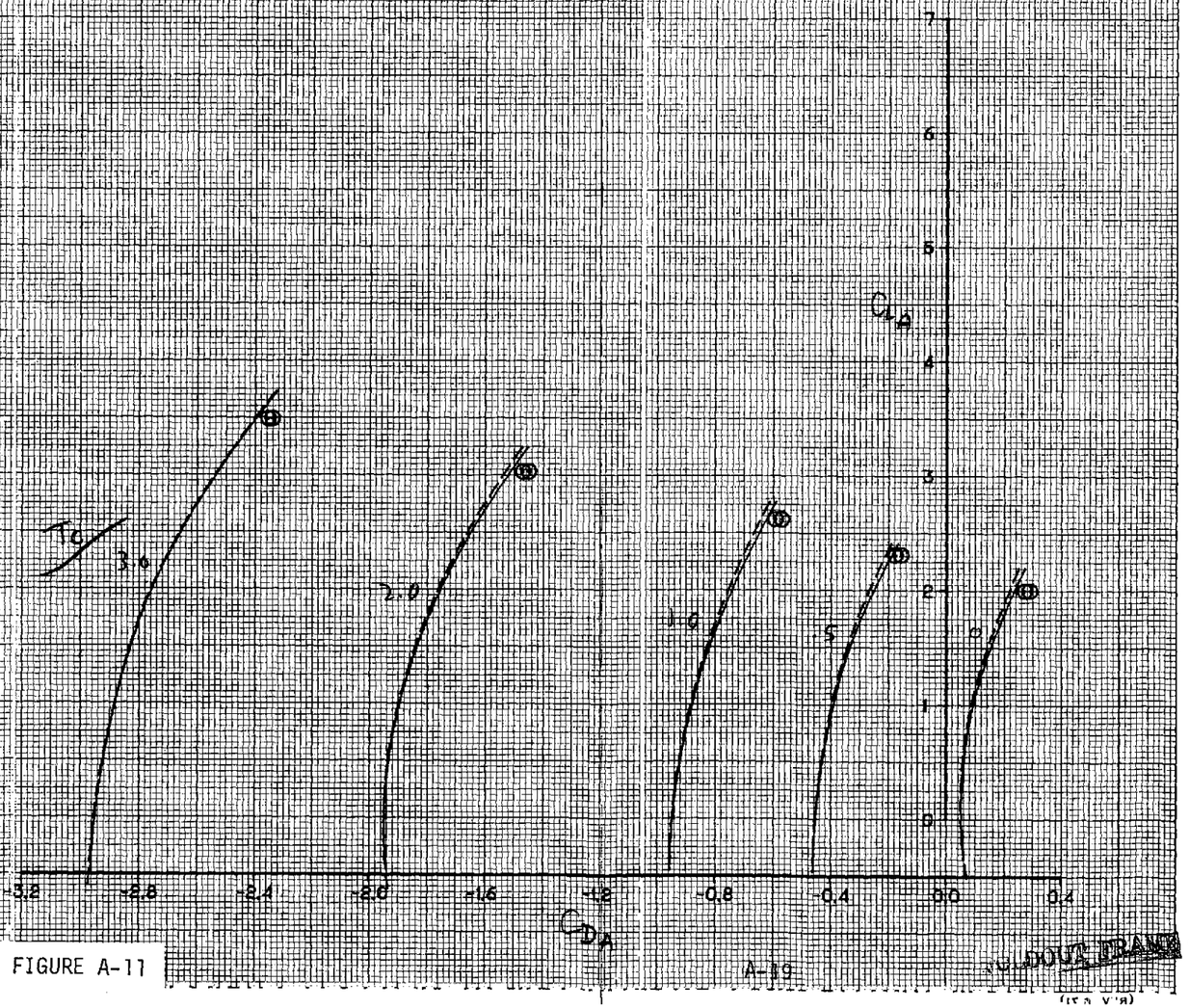
$V = 39^{\circ}$ ($\delta_F = 0^{\circ}$)

LATERAL DIRECTIONAL TRIM
ADDED SEPERATELY

Nominal Flap

——— AR = 9.0
— AR = 10.5





FOLDOUT FRAME 1

FOLDOUT FRAME 2

FIGURE A-11

DOUGLAS

REVISED
DATE 7-12-74
REPORT NO.
PAGE NO.
PREPARED BY: RDW
MODEL
REFERENCE

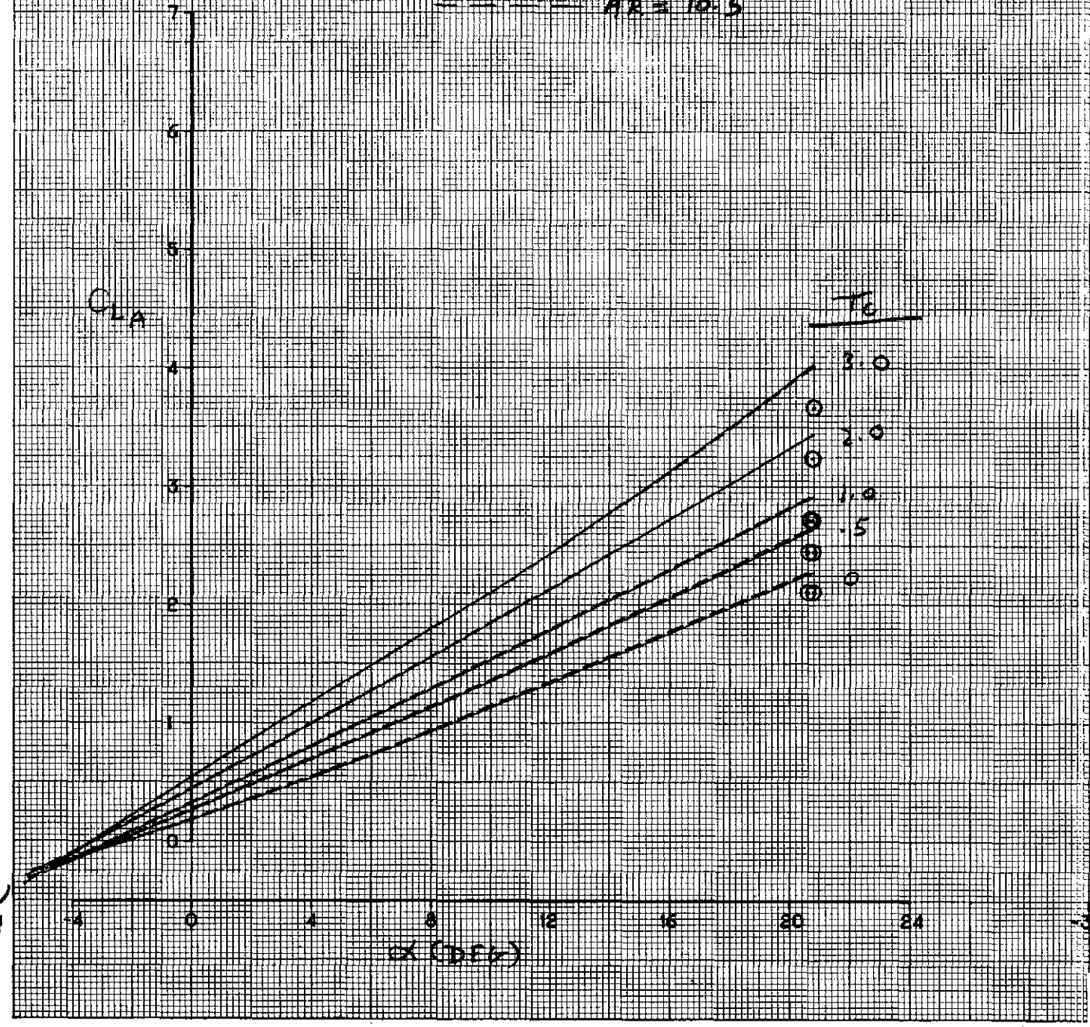
TURBOPROP HIGH-LIFT, ONE ENGINE, NOMINAL FLAP, 5°

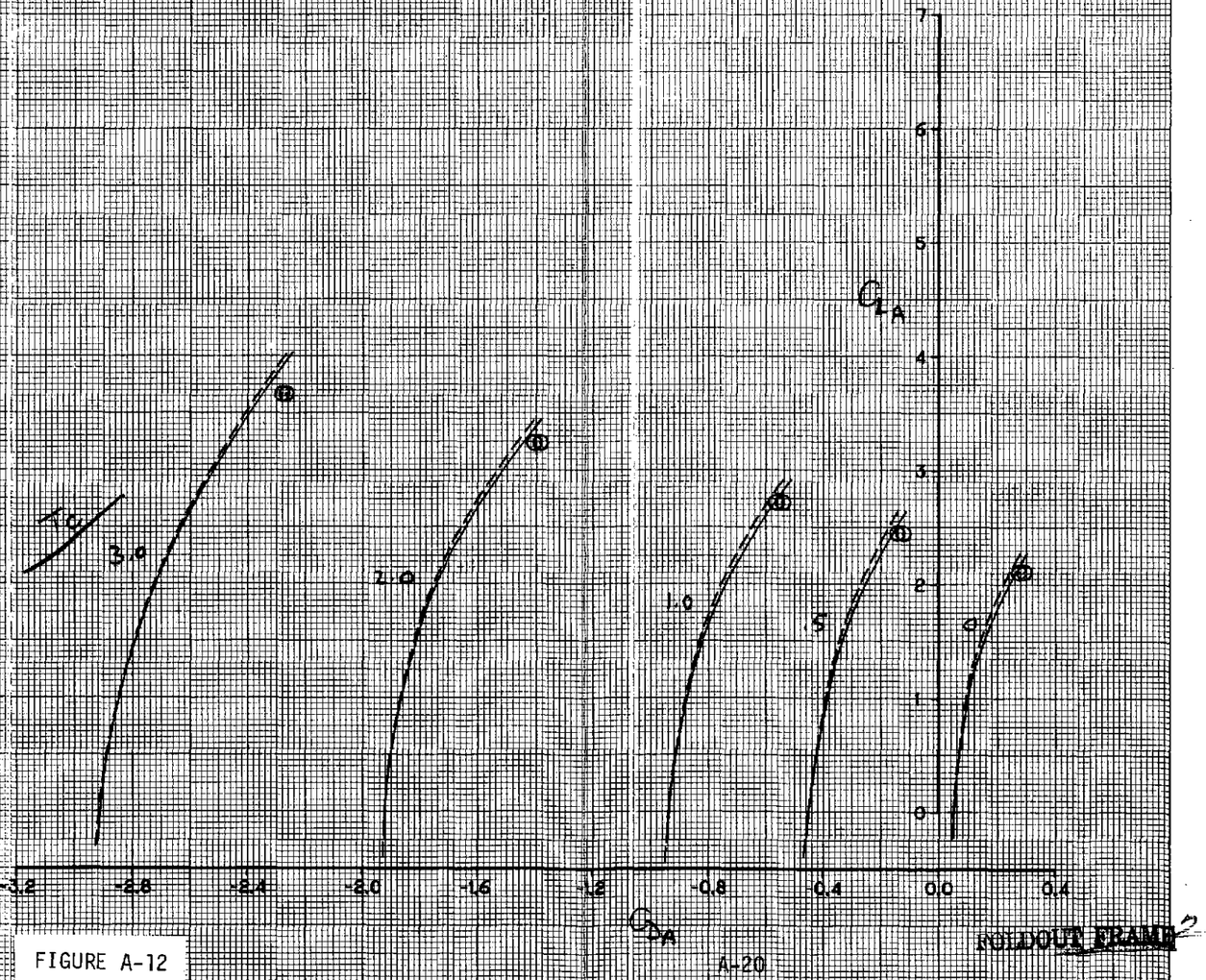
ONE ENGINE OPERATING
FULL SPAN LEADING EDGE SLAT
GEAR DOWN, CG @ 25% $\bar{c}$

$V = 6°$ ($\delta_F = 5°$)

LATERAL DIRECTIONAL TRIM
ADDED SEPERATELY

Nominal Flap





FOLDOUT FRAME

FOLDOUT FRAME

FIGURE A-12

(REV. 6-71)

DOUGLAS

REPORT NO. _____ REVISED _____
PAGE NO. _____ DATE 2-12-79
MODEL _____
PREPARED BY: RDW
REFERENCE _____

TURBOPROP HIGH-LIFT, ONE ENGINE, NOMINAL FLAP, 15°

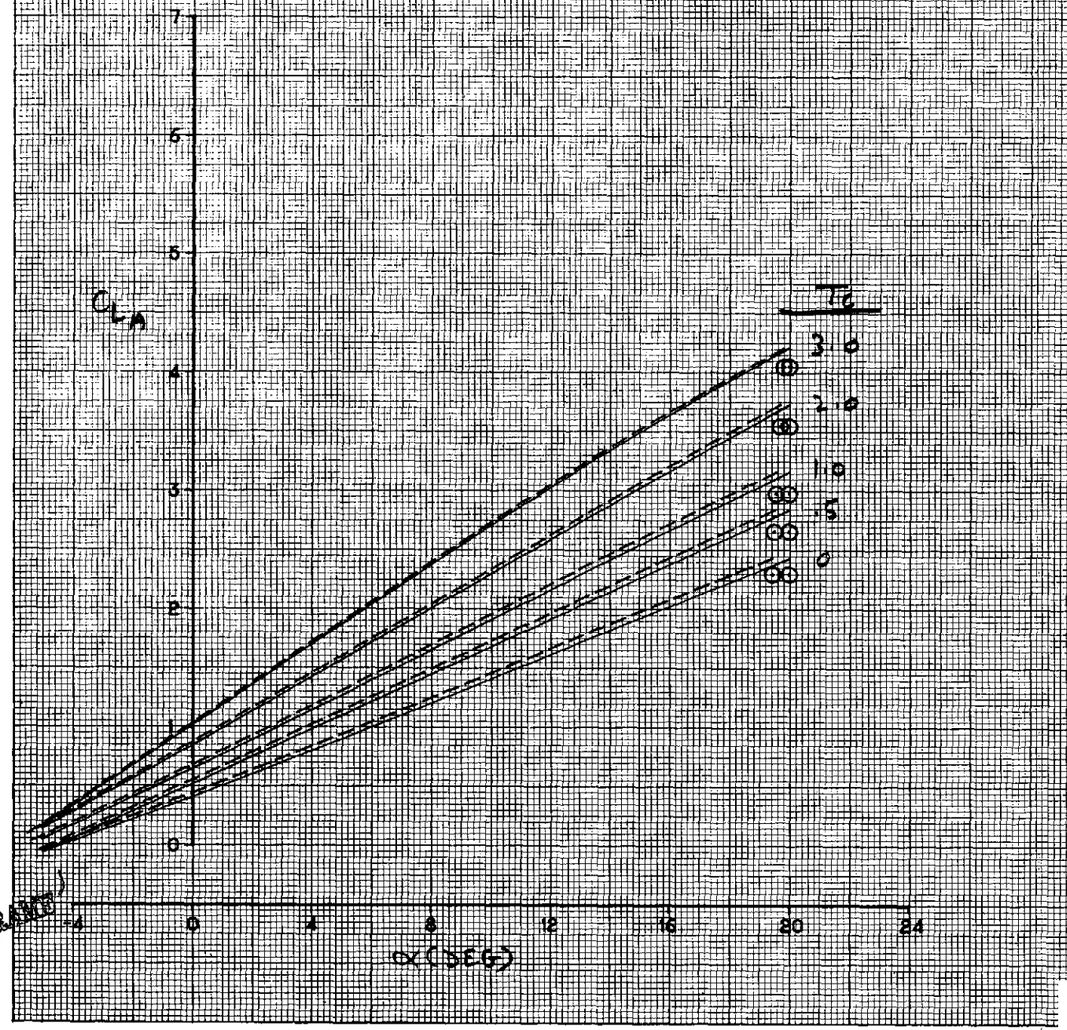
ONE ENGINE OPERATING
FULL SPAN LEADING EDGE SLAT
GEAR DOWN, cg @ 25% $\bar{c}$

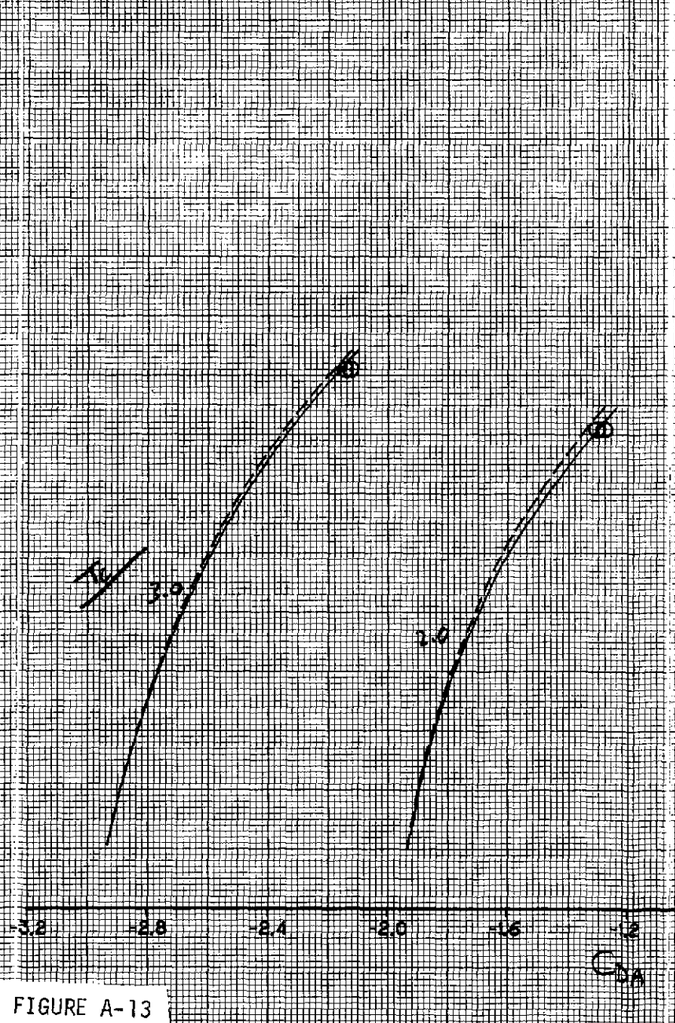
$V = 10.4^2$ ($\delta_F = 15°$)

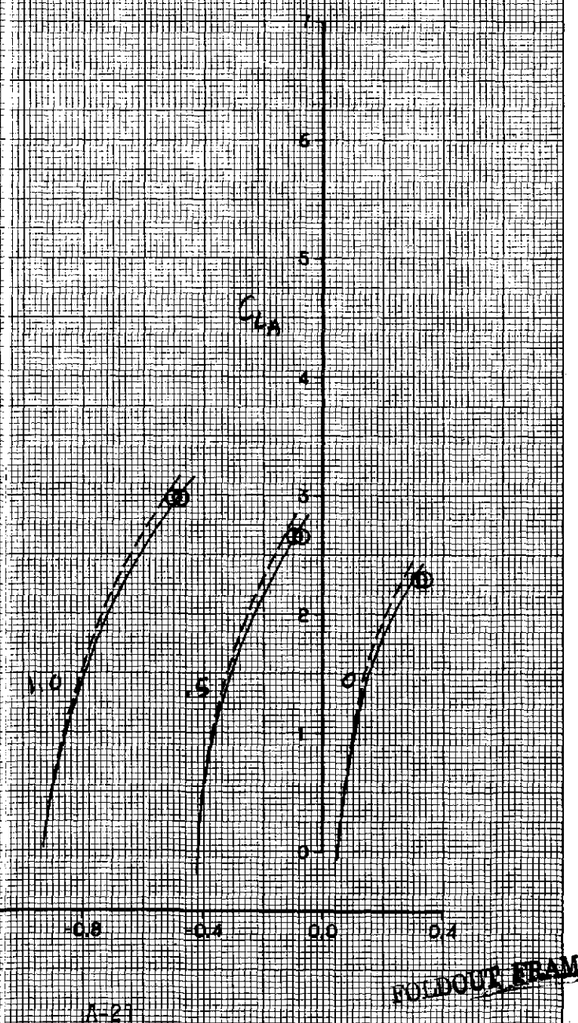
LATERAL DIRECTIONAL TRIM
ADDED SEPERATELY

Nominal Flap

——— AR = 9.0
— — — AR = 10.5







FOLDOUT FRAME 1

FOLDOUT FRAME 2

FIGURE A-13

(REV. 8-71)

DOUGLAS

REPORT NO. _____ REVISED _____

PAGE NO. _____ DATE 2-17-79

MODEL _____

PREPARED BY: RDV

REFERENCE _____

TURBOPROP HIGH-LIFT, ONE ENGINE, NOMINAL FLAP, 25°

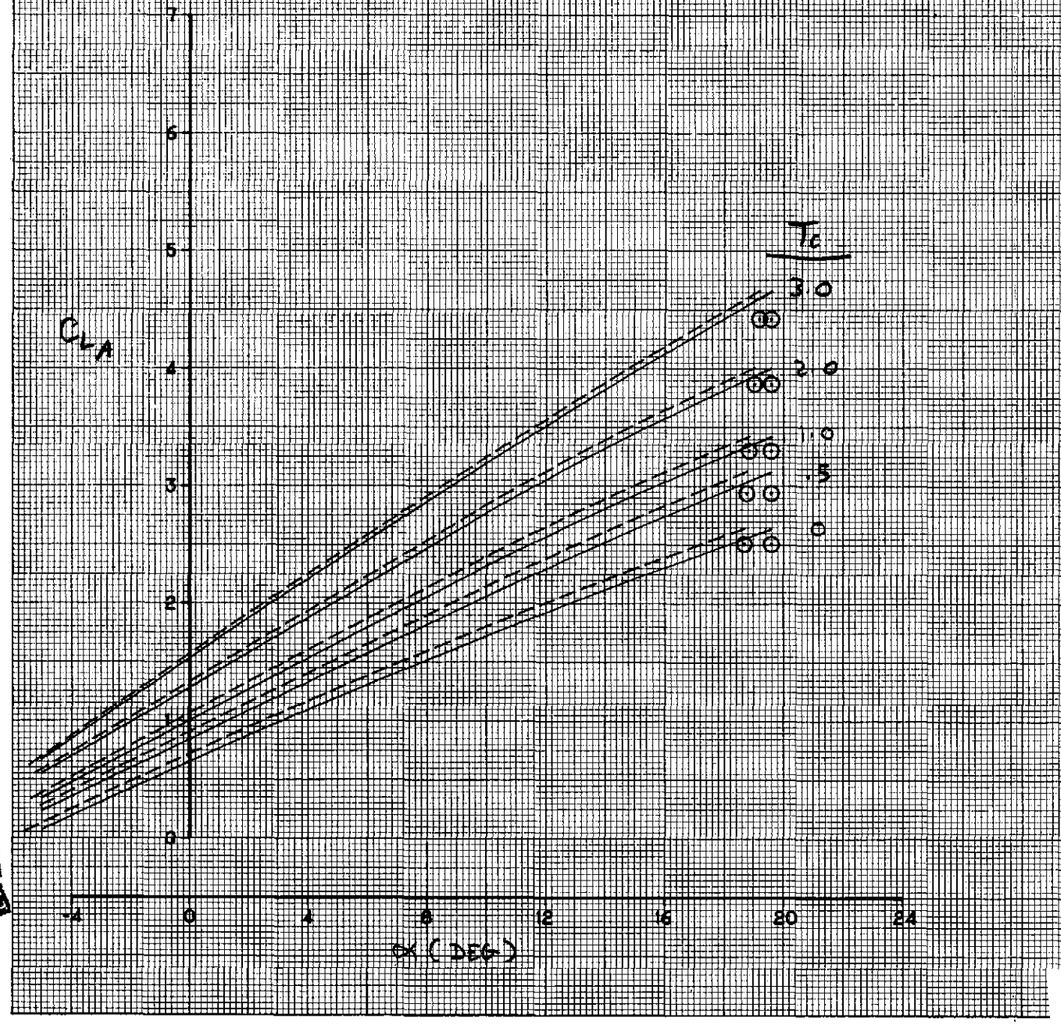
ONE ENGINE OPERATING
FULL SPAN LEADING EDGE SLAT
GEAR DOWN, CG @ 25 % $\bar{C}$

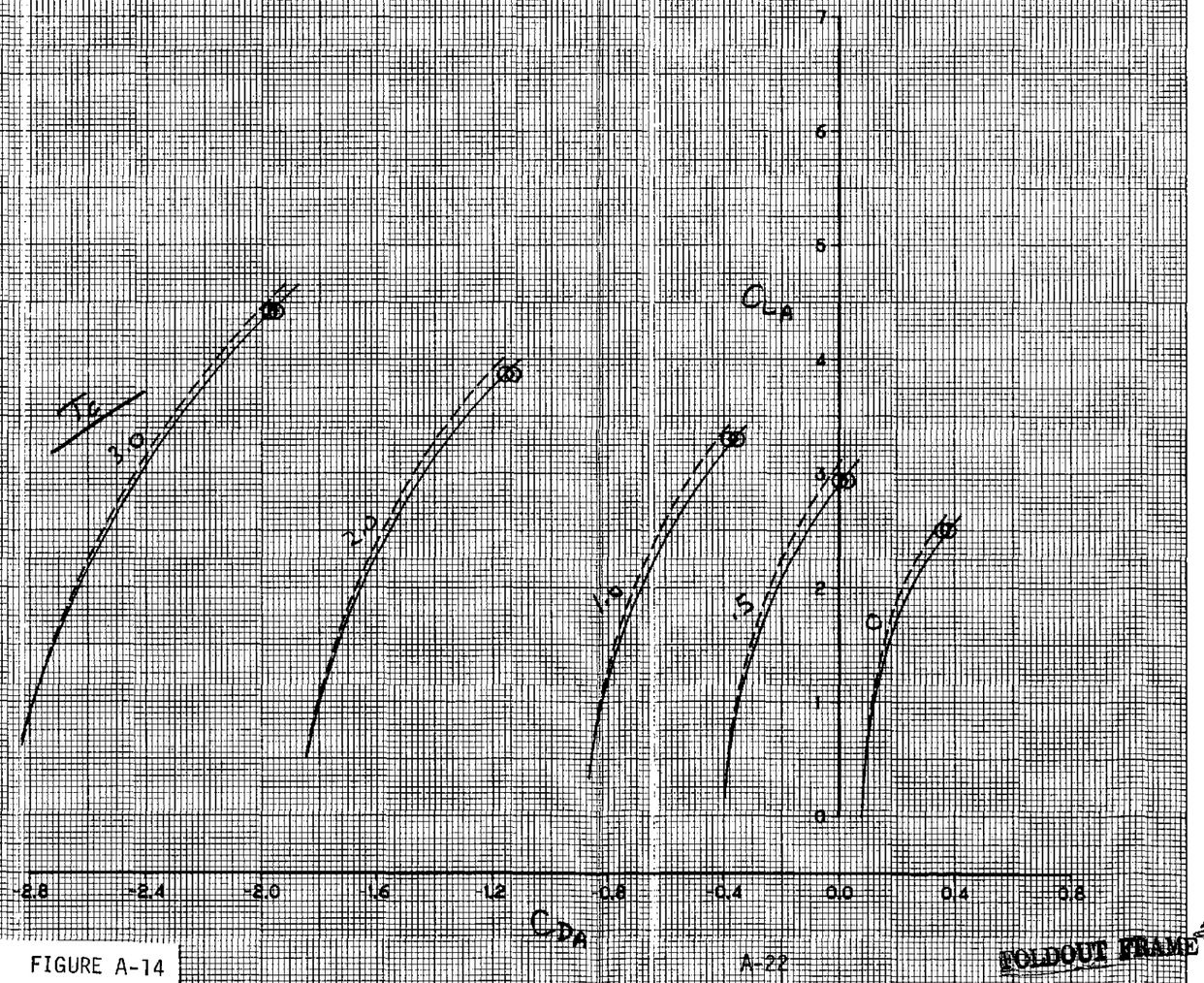
$\gamma = 14.2°$ ($\delta_F = 25°$)

LATERAL DIRECTION TRIM
ADDED SEPERATELY

Nominal Flap

——— AR = 9.0
— — — — AR = 10.5





FOLDOUT FRAME

FIGURE A-14

FOLDOUT FRAME 2

(REV. 6-71)

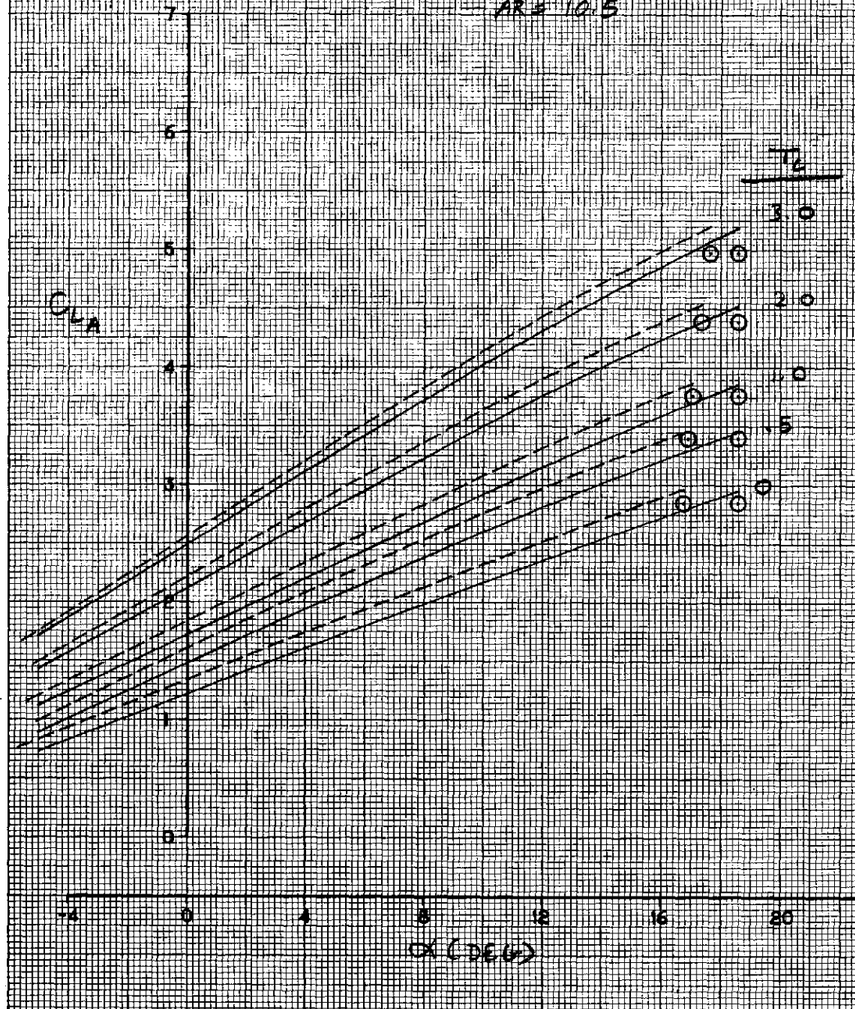
DOUGLAS

REVISED
DATE 7-12-74
REPORT NO.
PAGE NO.
MODEL
PREPARED BY: DVS
REFERENCE

TURBOPROP HIGH-LIFT, ONE ENGINE, NOMINAL FLAP, 50°
ONE ENGINE OPERATING
FULL SPAN LEADING EDGE SLAT
GEAR DOWN, C.G. @ 25% $\bar{c}$
$\Gamma = 22°$ ($\delta_f = 50°$)
LATERAL-DIRECTIONAL TRIM
ADDED SEPERATELY

Nominal Flap

AR = 9.0
AR = 10.5



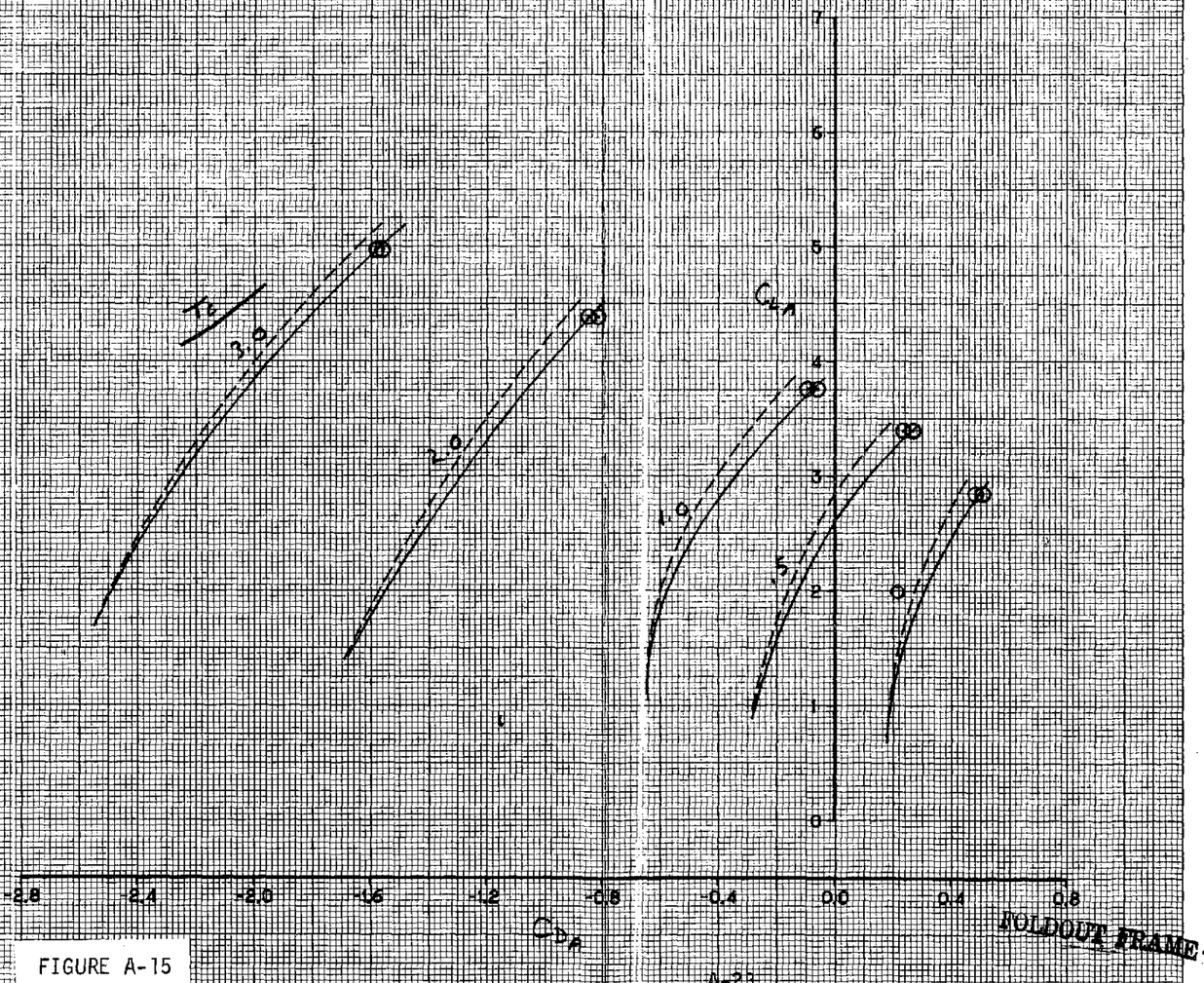


FIGURE A-15

TABLE A-4

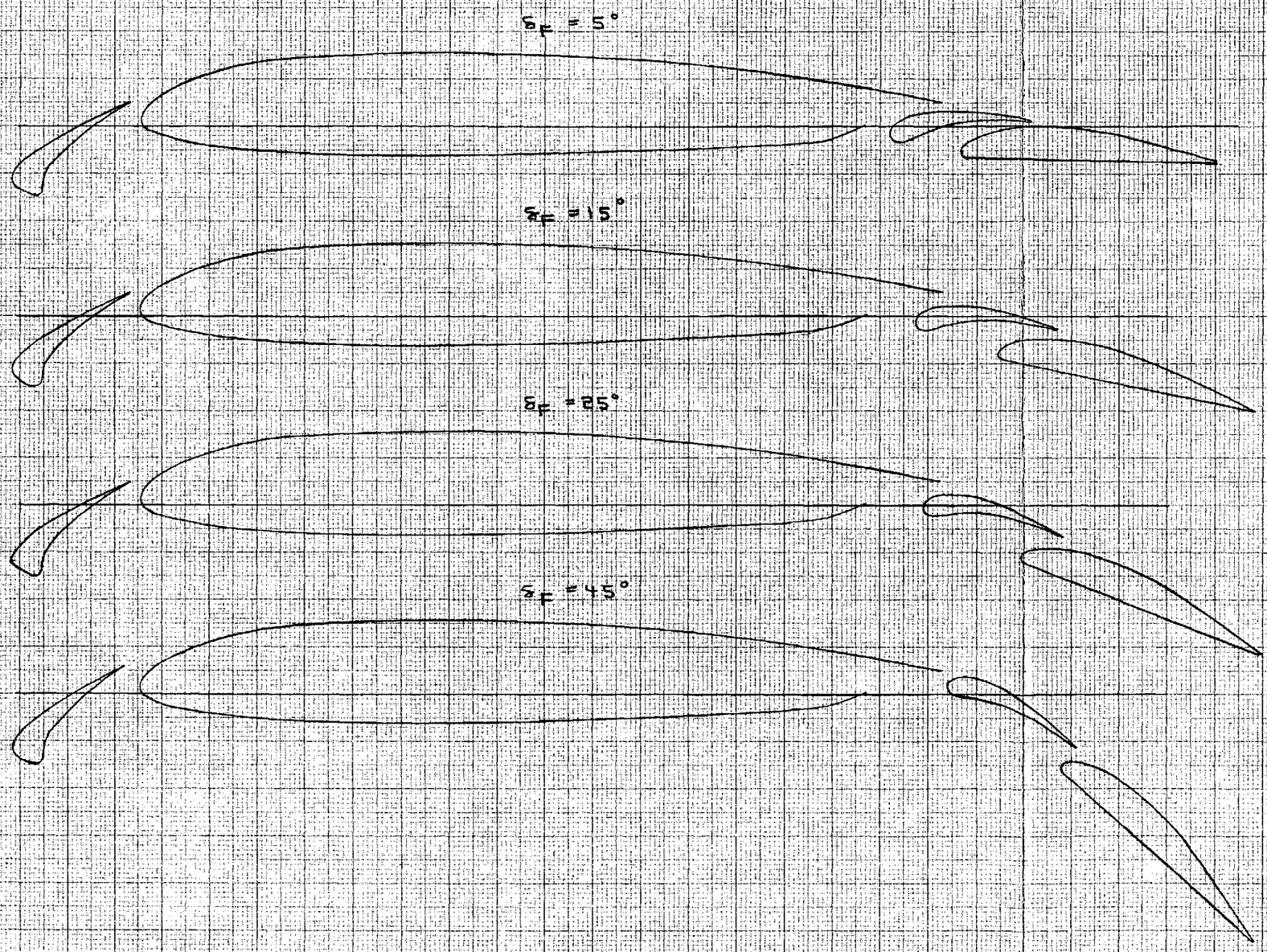
SIMPLE HIGH LIFT SYSTEM, MAXIMUM LIFT COEFFICIENTS

FLAP ANGLE (degrees/radians)	$C_{L_{M_{1g}}}$	$C_{L_{M_{V_{min}}}}$
0/0	1.35	1.42
5/0.087	1.46	1.59
15/0.262	1.64	1.79
25/0.436	1.82	1.93
50/0.873	2.15	2.28

ADVANCED HIGH LIFT SYSTEM

SUPER CRITICAL WING NOT REPRESENTED

$(C_F/C)_{NESTED} \approx .35$



FOLDOUT FRAME

FOLDOUT FRAME

FIGURE A-16

4. A 15% chord full-span leading-edge slat is provided to prevent flow separation at high angles of attack.

The low-speed aerodynamic characteristics used for the advanced flap high-lift systems are similar to that described above. The effects of Reynolds number on maximum lift coefficient were based on comparisons of low Reynolds number wind tunnel test data and flight test data for the basic DC-9 configurations. Douglas-developed analytical and empirical methods were used to adjust the DC-9 based data to the lower 5 degrees (0.087 rad) quarter chord sweep.

Figure A-17 shows the estimated out-of-ground effect longitudinally trimmed lift and drag characteristics for the advanced flap aircraft. The maximum lift coefficients for determining 1g and V_{min} stall speeds are presented in table A-5 . The estimated engine-out lateral-directional trim increments used in the performance analysis are based on the methods as used for the nominal high-lift system.

A.2.1.5 Ground Effects

Empirical methods based on DC-9 wind tunnel and flight test data were used to estimate lift and drag increments due to ground effect as aircraft height changed. The empirical curves of the type used are presented in figures A-18 and A-19. Figures A-20 and A-21 present the in-ground-effect high-lift data for the advanced and nominal high-lift systems with main gear on the ground.

A.2.2 High-Speed Aerodynamic Characteristics

The cruise drag characteristics for the configurations have been estimated by the well-established Douglas drag prediction procedure for transport aircraft. The cruise drag consists of zero-lift parasite drag and the drag due to lift at Mach numbers below those at which compressiblity effects exist, plus the drag due to compressibility. The zero-lift parasite drag and the drag due to lift are evaluated at 0.5 Mach number, but at the Reynolds number corresponding to the

PREPARED BY: _____
DATE: 4/2/74
REVISED _____

DOUGLAS

PAGE NO. _____
MODEL _____
REPORT NO. _____

ADVANCED FLAP

TRIMMED LIFT AND DRAG CHARACTERISTICS
FULL SPAN LEADING EDGE SLAT
ADJUSTED TO FLT. REYNOLDS NO.
GEAR DOWN, C.G. = .25 MAC
BASELINE, 50 PASSENGER

$C_{L_{max}}$'s ARE "1G" VALUES

δ_F (DEG): 0, 5, 15, 25, 50

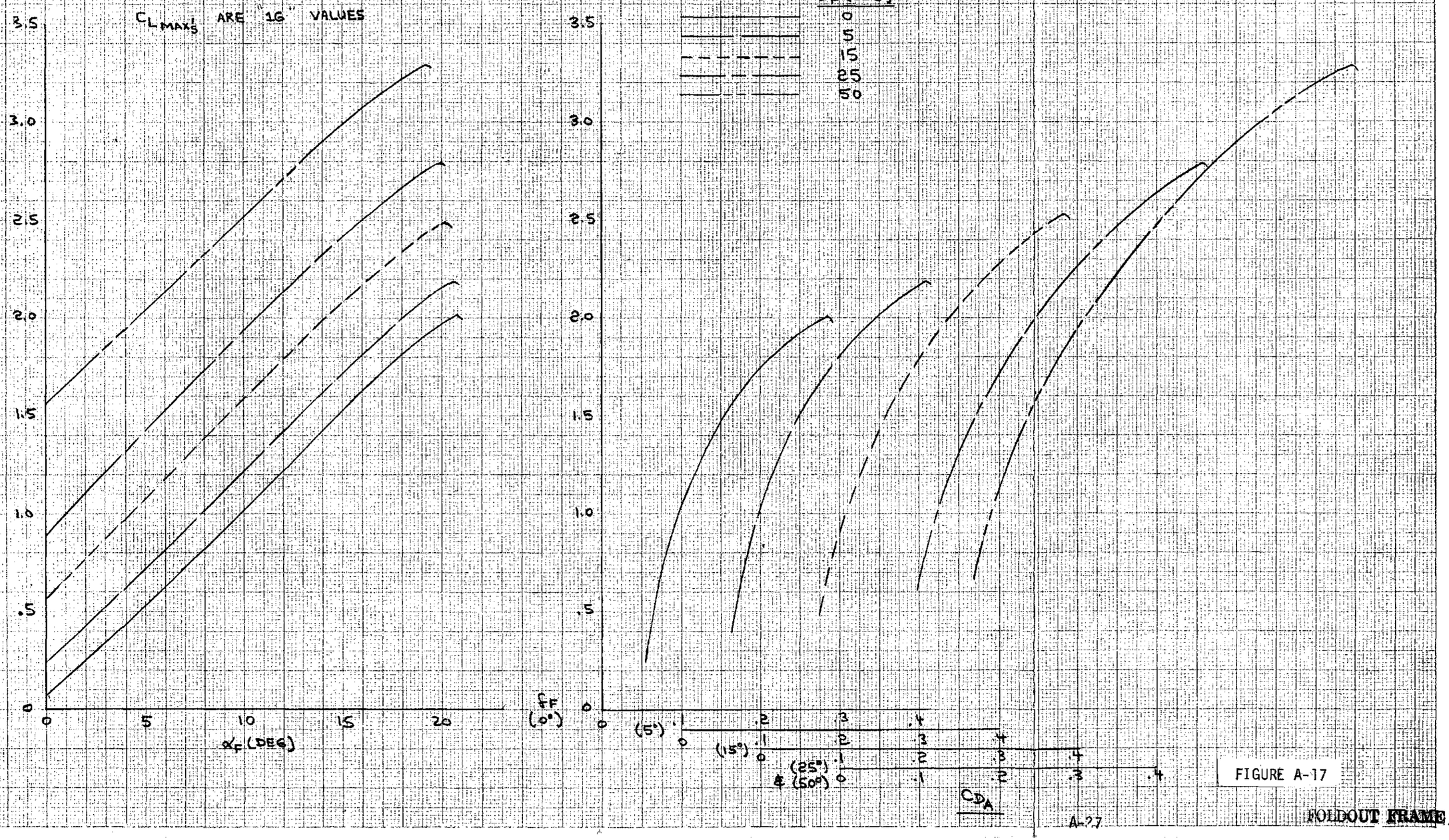


FIGURE A-17

FOLDOUT FRAME 1

FOLDOUT FRAME 2

TABLE A-5

ADVANCED HIGH LIFT SYSTEM, MAXIMUM LIFT COEFFICIENTS

FLAP ANGLE (degrees/radians)	$C_{L_{M_{ig}}}$	$C_{L_{M_{Vmin}}}$
0/0	2.01	2.08
5/0.087	2.19	2.32
15/0.262	2.49	2.64
25/0.436	2.79	2.90
50/0.873	3.29	3.42

DOUGLAS

HEIGHT CORRELATION FACTOR FOR LIFT IN GROUND EFFECT

$$C_{L_{\text{Ground Effect}}} = C_L + K_L \left(C_{L_{\text{Gear On Ground}}} - C_L\right)$$

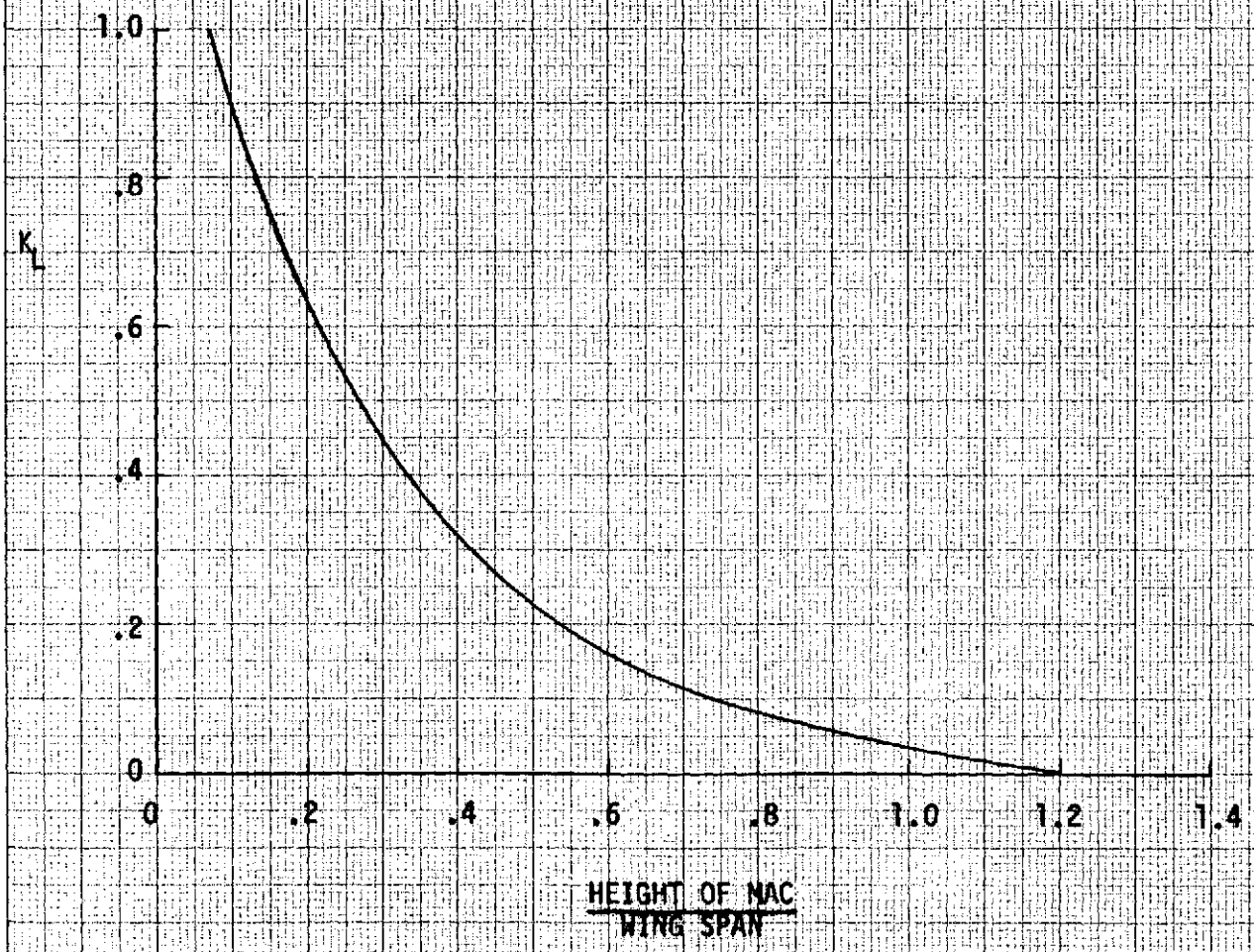


FIGURE A-18

HEIGHT CORRELATION FACTOR FOR DRAG IN GROUND EFFECT

$$C_D \text{ Due to Ground Effects} = -K_D \frac{C_L^2}{\pi AR}$$

$$C_{D_{Ground}} = C_{D_o} + \frac{C_L^2}{\pi e AR}(1-K_D e)$$

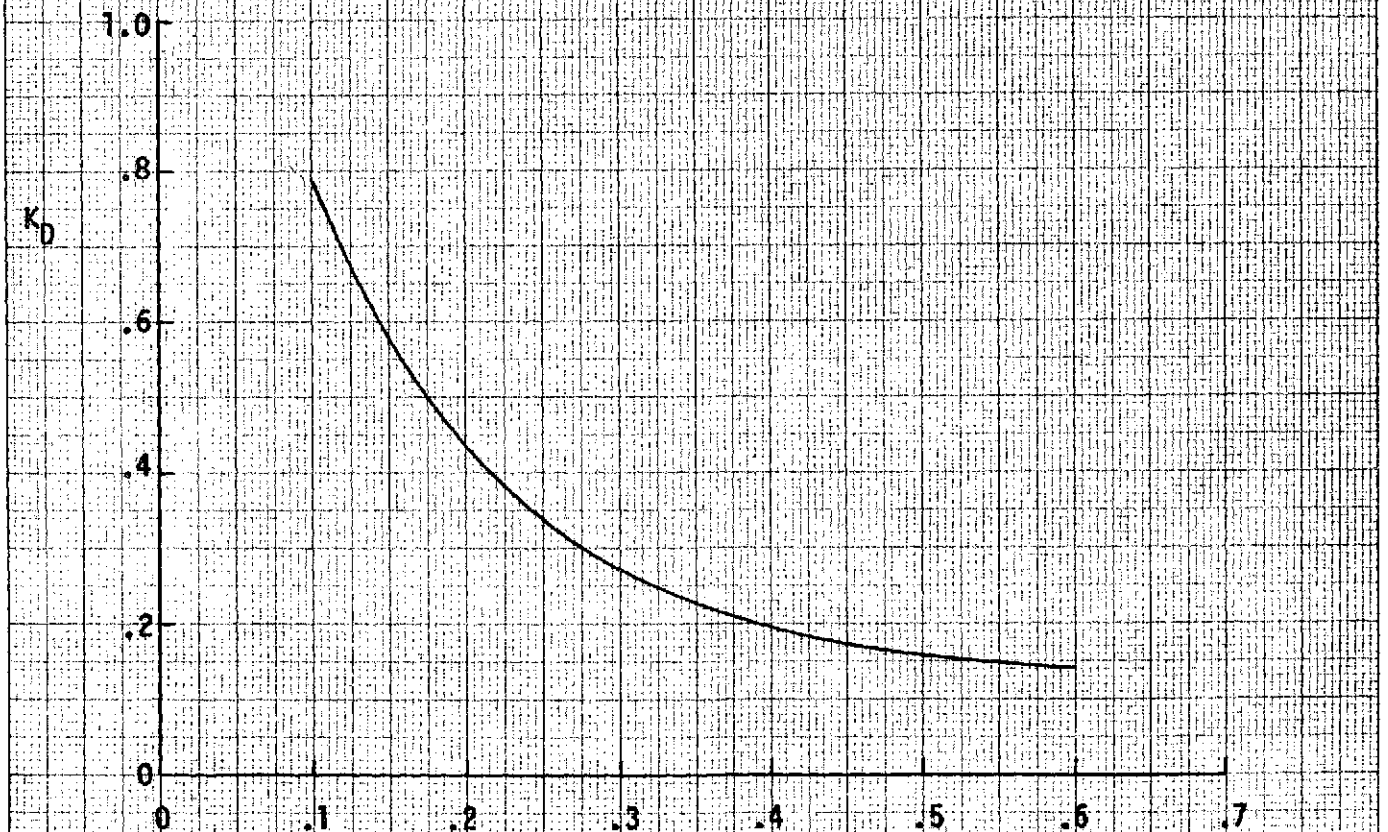


FIGURE A-19

ADVANCED FLAP MODEL
LIFT CHARACTERISTICS IN GROUND EFFECT
MAIN GEAR ON GROUND, C.G. AT 0.25 MAC

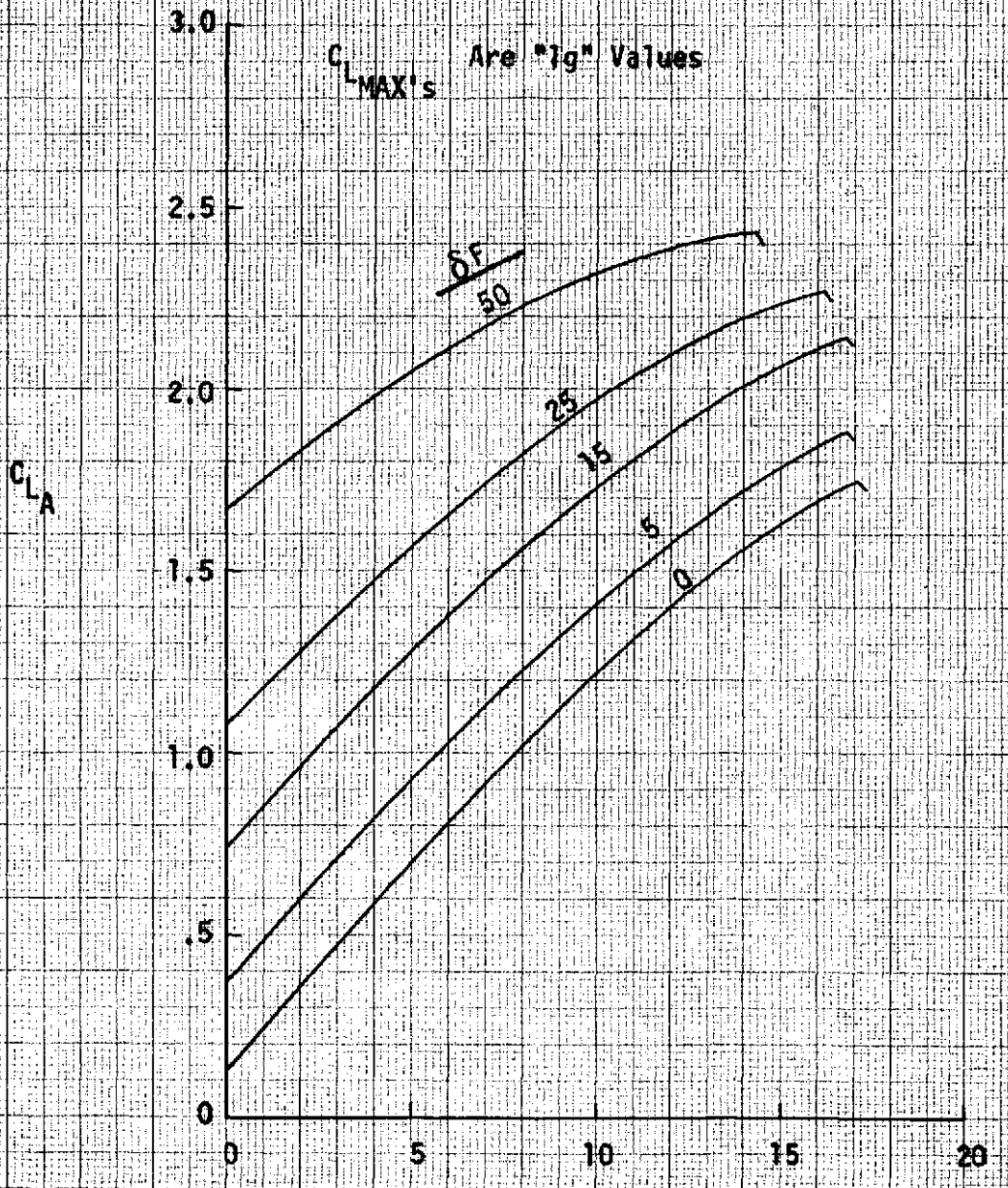


FIGURE A-20

NOMINAL FLAP MODEL
LIFT CHARACTERISTICS IN GROUND EFFECT
MAIN GEAR ON GROUND, C.G. AT 0.25 MAC

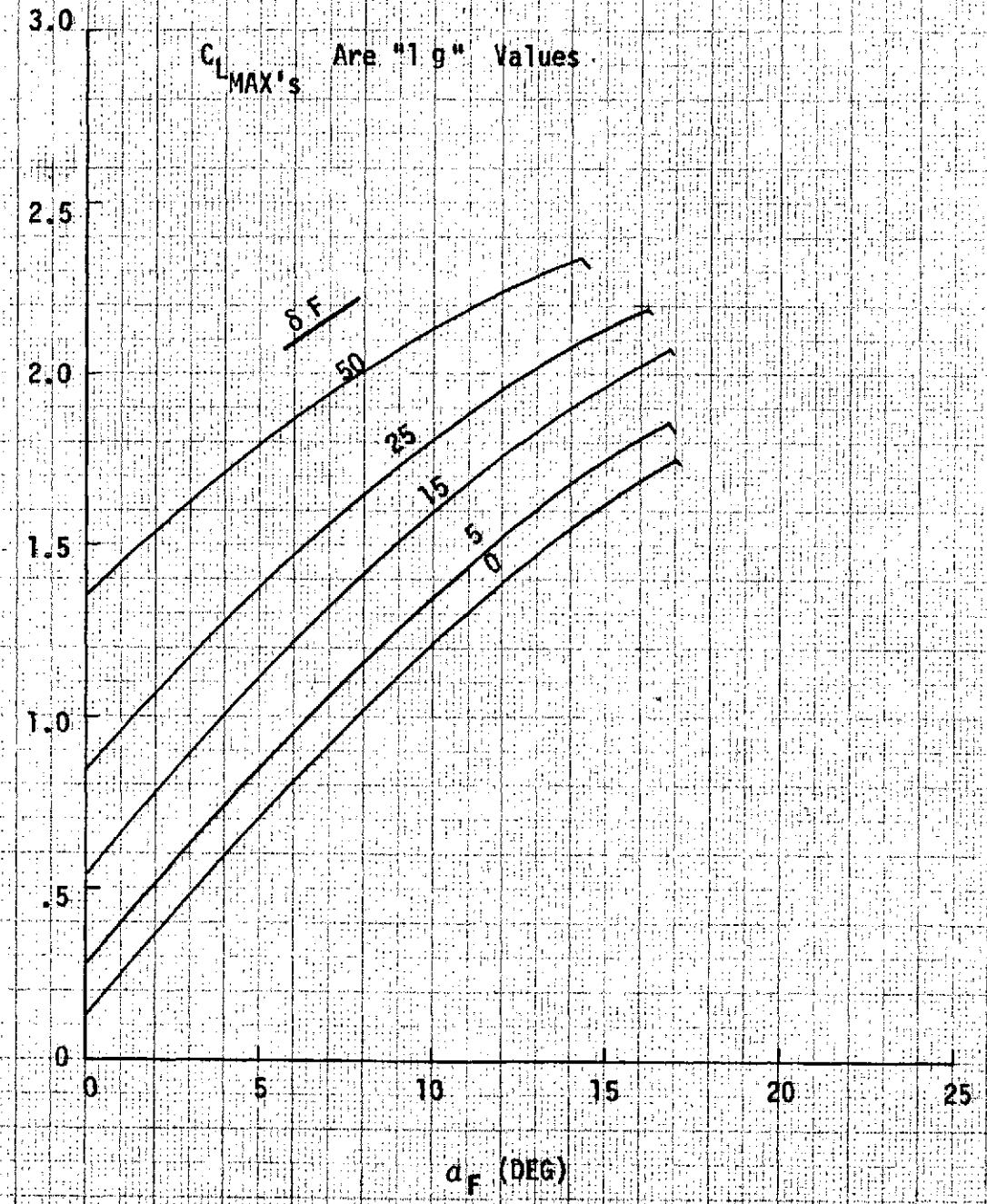


FIGURE A-21

design cruise points; in this way, the compressibility drag, which accounts for any drag increase at Mach numbers above 0.5, does not include a Reynolds number variation with Mach number.

A breakdown of the estimated zero-lift parasite drag and efficiency factor for the basepoint aircraft, section 7.2, are shown in table A-6 . The total estimated trimmed cruise configuration drag characteristics (zero-lift parasite, lift dependent, and compressibility drag) for this aircraft are shown in figure A-22 for a range of lift coefficients and Mach numbers.

TABLE A-6

LOW SPEED DRAG BREAKDOWN-BASEPOINT AIRCRAFT

50 Passenger Capacity

4500 ft (1372m) Field Length

1x850 n.mi. (1x1574km) Stage Length

Item	Equivalent Parasite Drag Area, D/q_∞-ft^2(m^2)	
Fuselage		
Friction, Form, Roughness	3.72	(0.346)
Canopy	0.18	(0.017)
Aft Fuselage Upsweep	0.22	(0.020)
Wing		
Friction, Form, Roughness	3.09	(0.287)
Flap Hinge Fairing	0.15	(0.014)
Horizontal Tail		
Friction, Form, Roughness	1.00	(0.093)
Elevator Hinge Fairings	0.05	(0.005)
Vertical Tail		
Friction, Form, Roughness	0.81	(0.075)
Nacelles and Pylons		
Friction, Form, Roughness	0.90	(0.084)
Subtotal	10.12	(0.941)
Miscellaneous Drags		
Excrescences, 7.1% of Subtotal	0.72	(0.067)
Air Conditioning, 0.7% of Subtotal	0.07	(0.007)
Control Surface Gaps	0.14	(0.013)
Contingency (5% of non-nacelle items)	0.51	(0.047)
Total Parasite Drag	11.56	(1.075)
Induced Drag Efficiency Factor	0.789	

ESTIMATED CRUISE CONFIGURATION DRAG CHARACTERISTICS
BASEPOINT AIRCRAFT
50 PASSENGERS
4500 FT(1372 M) FIELD LENGTH
1 x 850 N.MI.(1x1574 KM) STAGE LENGTH
BPR 6 ENGINES

$S_{W_{REF}}$ = 464 FT^2

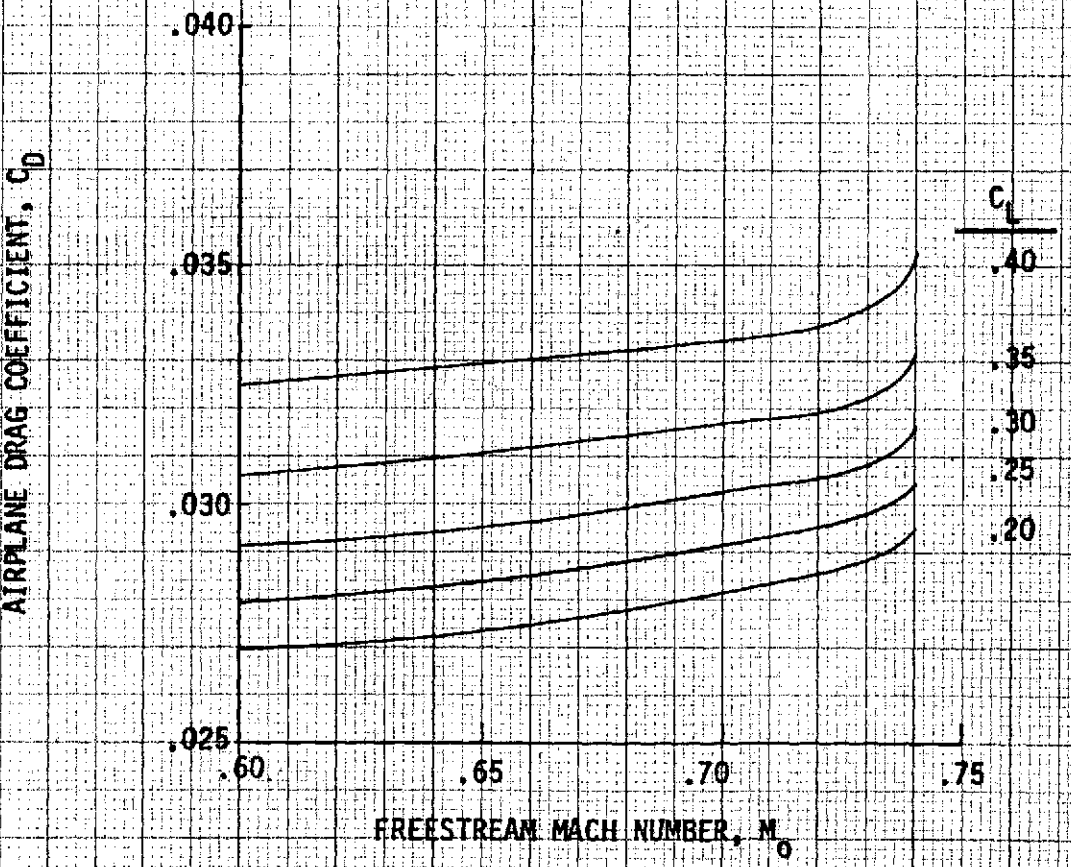


FIGURE A-22

A.3 PAYLOAD VS RANGE: FINAL DESIGN BASEPOINT

Figure A-23 is a graph showing the payload-range performance of this aircraft. At the design range of 850 nautical miles, the fuel required is 9,090 pounds including reserves. The fuel capacity of the wing (center section andouter panel) is 10,400 pounds, which provides a range of 1025 nautical miles at a payload of 8700 pounds. The addition of small belly tanks (1650 pounds requiring 34 ft^3) increases the range to 1250 nautical miles at a payload of 7050 pounds. The maximum space limited payload is composed of 50 passengers and baggage, plus 50 ft^3 of freight. Baggage and freight is assumed to weigh 10 lb/ft^3. The weight limited payload is 54 passengers and baggage or 10,800 pounds, using a 29 inch seat pitch.

A.4 CURRENT AND PROPOSED AIRCRAFT

A.4.1 Dimensional, Weight and Performance Data

Tables A-7 and A-8 contain data necessary to define these turboprop and turbofan aircraft, respectively.

A.4.2 Payload, Block Fuel and Time vs Range

Figures A-24, A-25 and A-26 are graphs showing these performance characteristics for the turboprop aircraft. Figures A-27, A-28 and A-29 are graphs showing the same performance characteristics for the turbofan aircraft.

A.4.3 Three-View and Supporting Drawings

Table A-9 contains a list of drawings used in the Aircraft Requirements (Parametric), Design and Evaluation phases of this study.

FINAL DESIGN BASEPOINT
PAYLOAD-RANGE

CRUISE: 0.75M @ 25000 FT.

ADVANCED FLAP

(1) DESIGN POINT: 4500 FT FIELD; 50 PSGR; 850 N. MI. RANGE
(2) MAX. FUEL CAPACITY: WING TANKS ONLY (10,400 LB)
(3) BELLY TANKS (1650 LB)

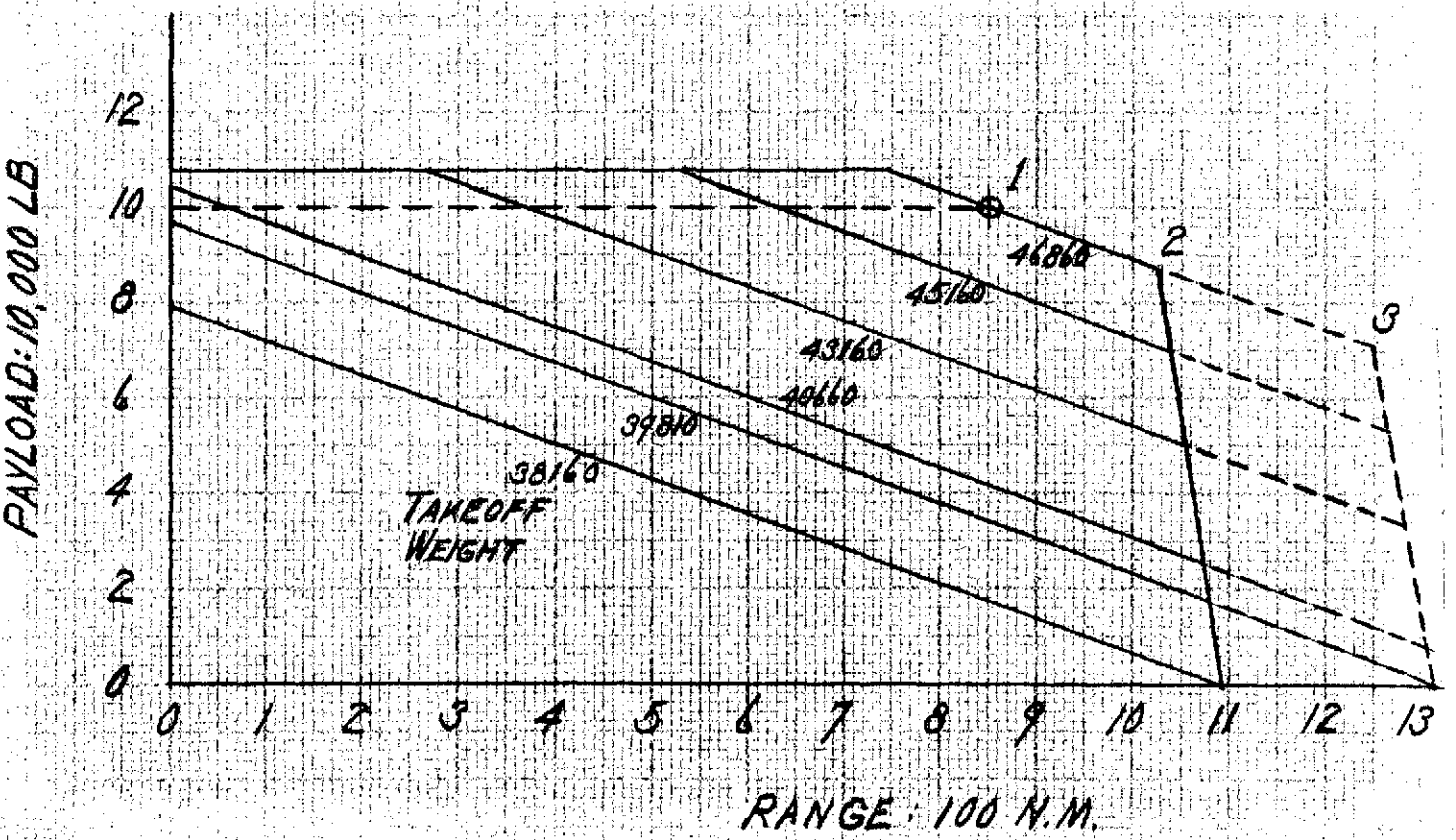


FIGURE A-23

TABLE A-7: CURRENT & EXISTING TURBOPROP AIRCRAFT

AIRCRAFT	Shorts SD 3-30	VFW-Fokker F27MK600	VFW-Fokker F27MK500	Dehavilland DHC-7	General Dynamics CV580	Nihon YS11
Engine: Type/No	Turboprop(2)	Turboprop(2)	Turboprop(2)	Turboprop(2)	Turboprop(2)	Turboprop(2)
Mounting	U'Wing, Snug	U'Wing, Snug	U'Wing, Snug	U'Wing, Snug	O'Wing, Snug	O'Wing, Snug
Wing: Position	High	High	High	High	Low	Low
Price: 1975 $(10)^6$	1.30					
Max. Takeoff Weight (lb)	21,700	43,346	45,000	41,000	53,200	50,265
Max. Zero Fuel Weight (lb)		37,500	39,500	35,500		
Max. Landing Weight (lb)	21,400	41,000	42,000	39,000	50,670	45,047
Oper. Weight Empty(psgr) (lb)	13,890	24,940	25,990	24,440		31,878
Mfgr's Weight Empty (lb)	13,290	22,744	23,536			
Cost Weight (lb)						
Max. Fuel Capacity (lb)	3,840	12,941	12,941	10,230	10,250	12,210
Max. Payload (lb)	7,500	12,560	13,510	11,060		11,907
Passenger Payload (lb)	6,000	8,827	11,235	9,120	10,400	10,318
No/No ABR/Pitch (in)	30/3/30	44/4/31-33	56/4/28.5	48/4/32	52/4/	52/4/38
Range:Psgr Payload (nm)	235/225	1,075	810	768	870	580
Cruise: Speed (LR/HS) (kn)	198	259	259	200	350	257
Altitude (ft)	10,000	20,000	20,000	15,000	15,000/20,000	20,000
Thrust/Weight: Takeoff						
Wing Loading: Takeoff (lb/ft^2)		59.7	55.7	47.7	71.0	49.4
Aspect Ratio	12.0	12.0	12.0	10.06	12.0	10.8
Sweep: 0.25 chord (deg)	0	0	0	3.5		3.0
Cabin: Diameter (in)	78	100.5	100.5	103.0		113.0
Length (ft)	31.1	47.4	52.4	40.0	39.8	47.3
Max Height (in)	78	79.5	79.5	78/73	79.0	80
Floor Width (in)	78	82.7	82.7	84.0	106.0	94
Vol:Cargo/Bagg. (ft^3)		297	297	286	402	335
Press. Diff (lb/m^2)					4.16	
FAR TOFL: Distance (ft)	3850(4300)	5480(6030)	4090(5320)	2200/2450	4,380	2,890
Weight (lb)	21,700	43,346	45,000	41,000		50,265
Condition	ISA(+15°C)	ISA(+15°C)	ISA(+15°C)	59°F/90°F		ISA
FAR Landing: Distance (ft)	3,320	3,290	3,290	2,050	4,256	3,790
Weight (lb)	21,000	36,000	36,000	39,000		48,047
Condition						
Noise: FAR 36;T.O.,LAT,(EPNdB) APPR.	85/90/95	89/93/99	89/93/99	80/82/82		
Engine: Company	P&W	R R Dart	R R Dart	P&W	Allison	R R Dart
Model	PT6A-45	RDA7MK532-7R	RDA7MK532-7R	PT6A-50	501-D15	RDA 10/1
Rating: TO (Lb/HP)	1,120	2,140+525	2,140+525	1,174	3,750	2,660
Propeller: Company	Hartzell	Rotol	Rotol	Ham-Std	Aeroproducts	Rotol
Blade/Dia (no/ft)	5/9.0	4/11.5	4/11.5	4/11.25	4/13.5	4/14.5

TABLE A-8 CURRENT & EXISTING TURBOFAN AIRCRAFT

AIRCRAFT		Dassault-Breguet Falcon 30	VFW-Fokker VFW614	VFW-Fokker F28MK1000/5000	VFW-Fokker F28MK2000/6000	Hawker-Siddeley HS146-100	Hawker-Siddeley HS146-200
Engine: Type/No		Turbofan(2)	Turbofan(2)	Turbofan(2)	Turbofan(2)	Turbofan(4)	Turbofan(4)
Mounting		Aft Fuselage	Overwing, Pylon	Aft Fuselage	Aft Fuselage	Underwing Pylon	Underwing Pylon
Wing: Position		Low	Low	Low	Low	High	High
Price: 1975	$(10)^{-6}$						
Max. Takeoff Weight	(lb)	35,275	44,000	65,000/70,800	65,000/70,800	72,000	
Max. Zero Fuel Weight	(lb)	29,320	36,600	54,500	54,500/56,000	60,500	
Max. Landing Weight	(lb)	32,190	44,000	59,000/64,000	59,000/64,000	70,000	
Operating Weight Empty (Psgr)	(lb)	21,820	27,560	35,464/37,437	36,953/38,775	41,130	
Manufacturers Weight Empty	(lb)		26,130	34,470/36,443	35,943/37,765		
Cost Weight	(lb)						
Max. Fuel Capacity	(lb)	9,350		16,982/22,736	16,982	17,850	
Max. Payload	(lb)	7,500	9,040	19,036/17,063	17,547/17,225	19,370	
Passenger Payload	(lb)	5,700	8,200/	12,000	15,000	14,200	
No./No. ABR/Pitch (in)		30/3/31	40-44/4/32-33	60/5/32-33	75/5/31-32	71/5/33	(NOT AVAILABLE)
Range: Psgr Payload	(nm)	835					
Cruise: Speed (LR/HS)	(kn)	445	397	440	440	425	
Altitude	(ft)	25,000	21,000/25,000			22,000	
Thrust/Weight: Takeoff		0.344	0.340	0.303/0.278	0.303/0.278	0.361	
Wing Loading: Takeoff	(lb/ft^2)	66.6	64.0	79.1/83.4	79.1/83.4	86.5	
Aspect Ratio		6.58	7.22	7.27/8.00	7.27/8.00	9.00	
Sweep: 0.25 Chord	(deg)	29.55	15.0	16.0	16.0	15.0	
Cabin: Diameter	(in)	96.0	104.7	120.2	120.2	140.0	
Length	(ft)	37.0	36.8	43.0	50.3	50.6	
Max. Height	(in)	73.0	76.8	79.3	79.3		
Floor Width	(in)	72.5	90.				
Volume: Cargo/Bag	(ft^3)	220	194-114	460	557	517	
Press. Diff.	(lb/in^2)	8.5	6.55	7.45	7.45	6.5	
FAR TOFL: Distance	(ft)	5000(5180)	4,000	5,490/5,860	5,490/5,860	3,500	
Weight	(lb)	35,275	44,000	65,000/70,800	65,000/70,800	72,000	
Condition		SL,ISA(+10°C)		SL,ISA	SL,ISA	SL,ISA	
FAR Landing: Distance	(ft)	4,000	3,600	3,540/3,120	3,540/3,120		
Weight	(lb)	32,190	44,000	59,000/64,000	59,000/64,000		
Condition							
Noise: FAR 36; T.O., LAT., APPR.	(EPNdB)		89/95/96	93/103/102	93/103/102		
Engine: Company		Avco-Lycoming	R.R. Bristol	R.R. Spey	R.R. Spey	Avco-Lycoming	
Model		ALF 502-D	SNECMA M45H-01	MK555-15/15H	MK555-15/15H	ALF 502H	
Rating: T.O.	(lb/HP)	6,070	7,473	9,850	9,850	6,500	
Propeller: Company		---	---	---	---	---	
Blade/Diam	(no/ft)	---	---	---	---	---	

FOLDOUT FRAME 1

FOLDOUT FRAME 2

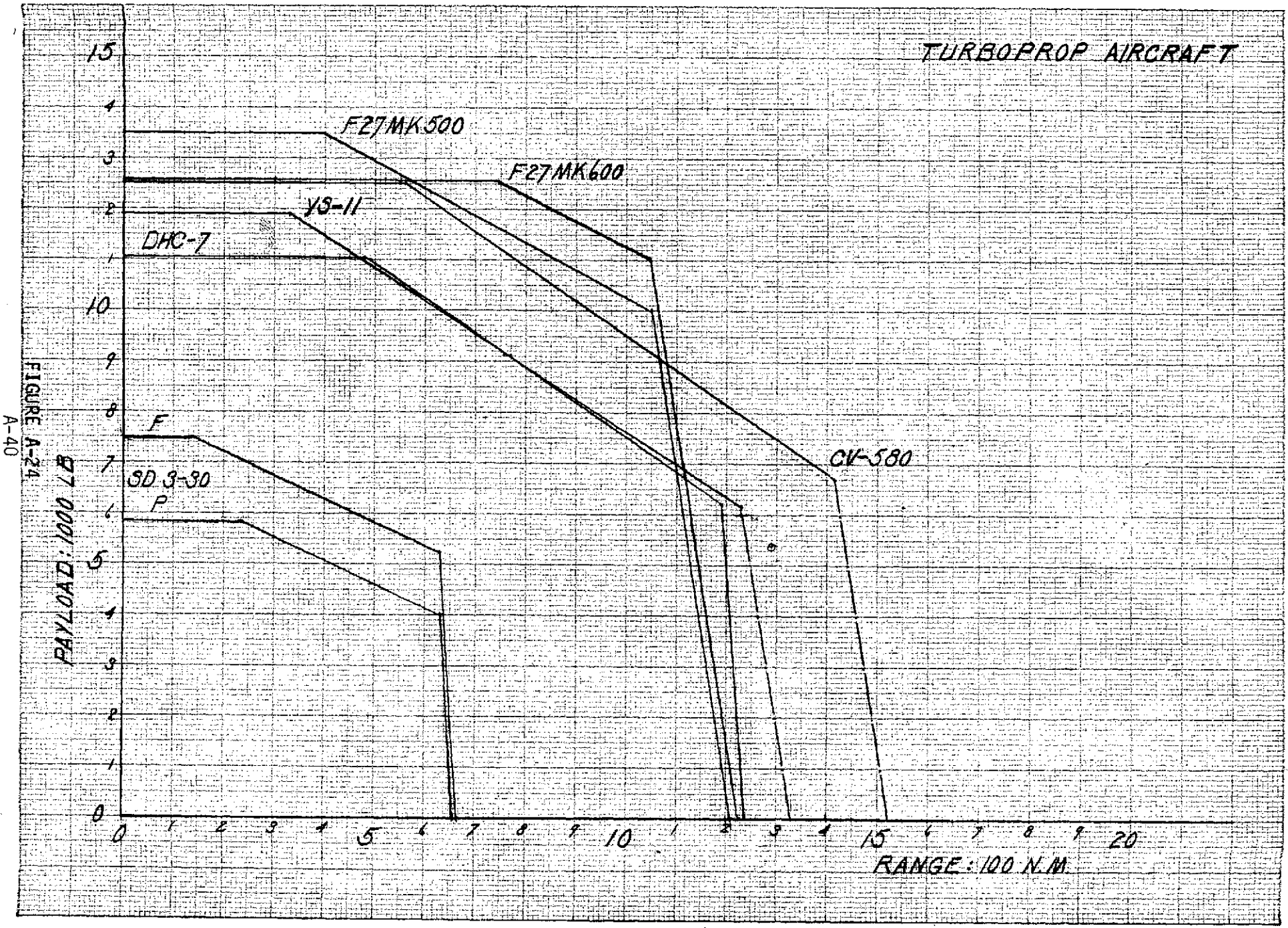


FIGURE A-24

DOUGLAS

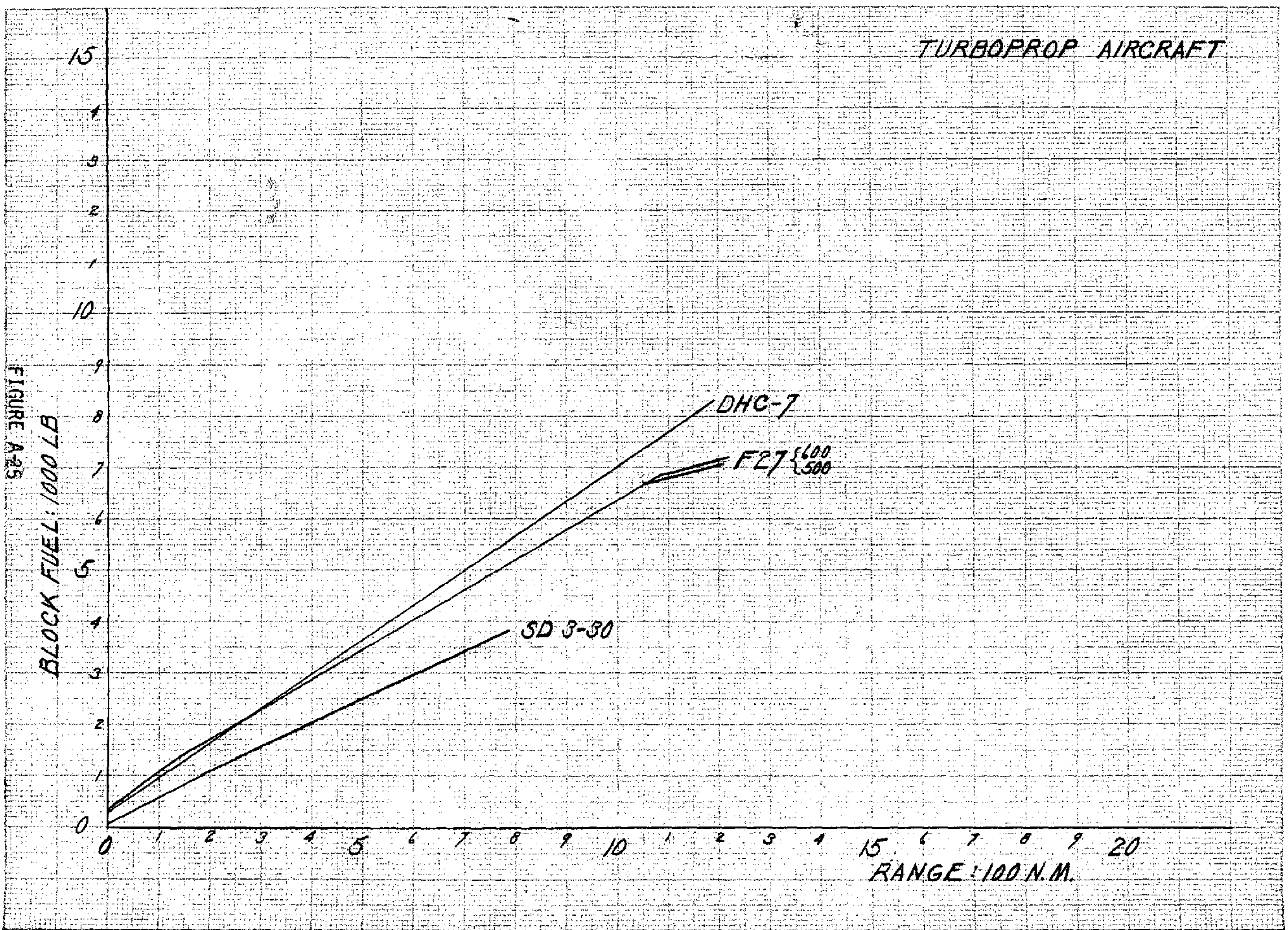


FIGURE A-25

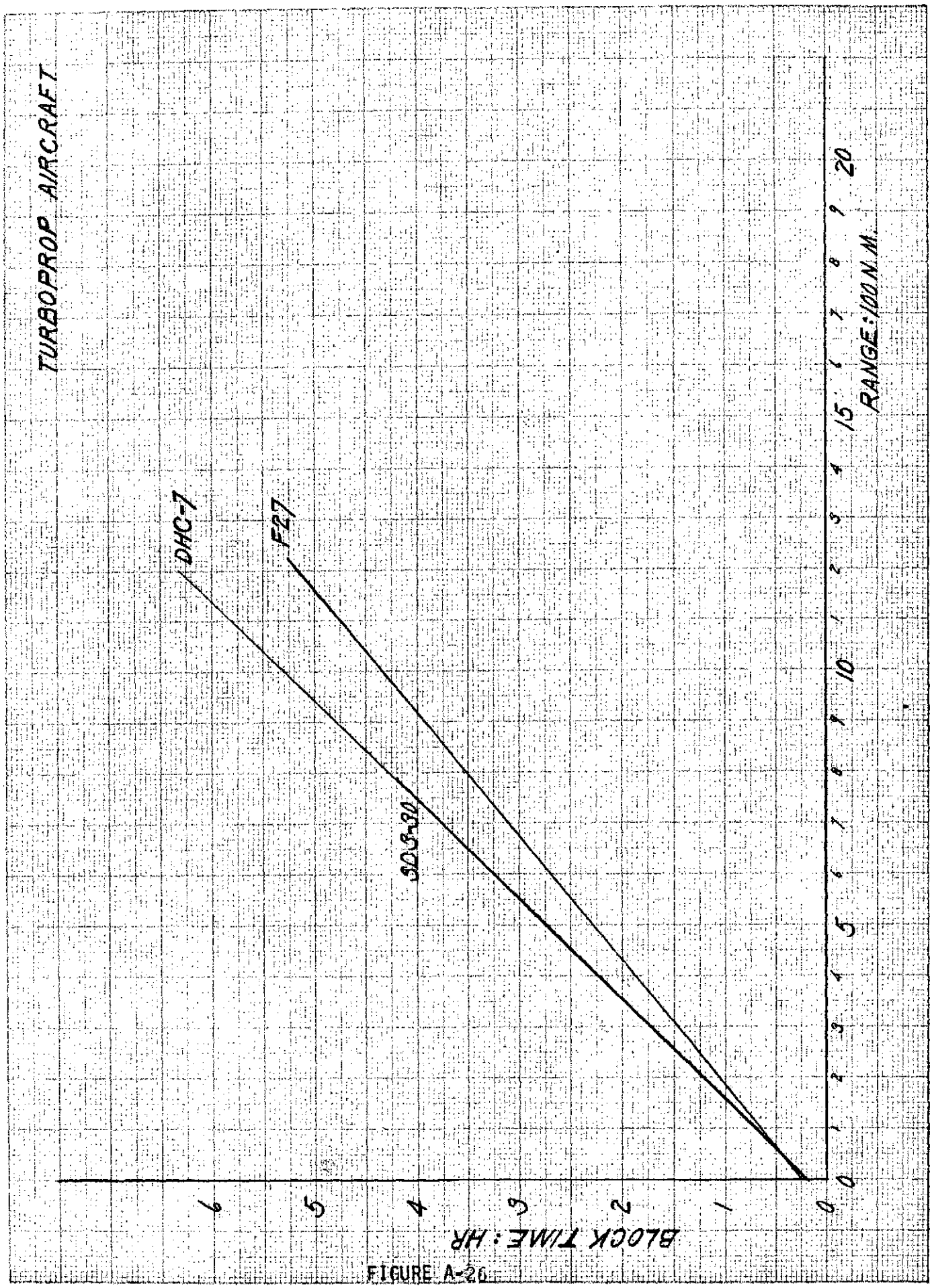

TURBOPROP AIRCRAFT
DHC-7
F27
SD3-30
BLOCK TIME: HR
0
1
2
3
4
5
6
RANGE: 100 N.M.
0
1
2
3
4
5
6
7
8
9
10
1
2
3
4
5
6
7
8
9
15
1
2
3
4
5
6
7
8
9
20

FIGURE A-26

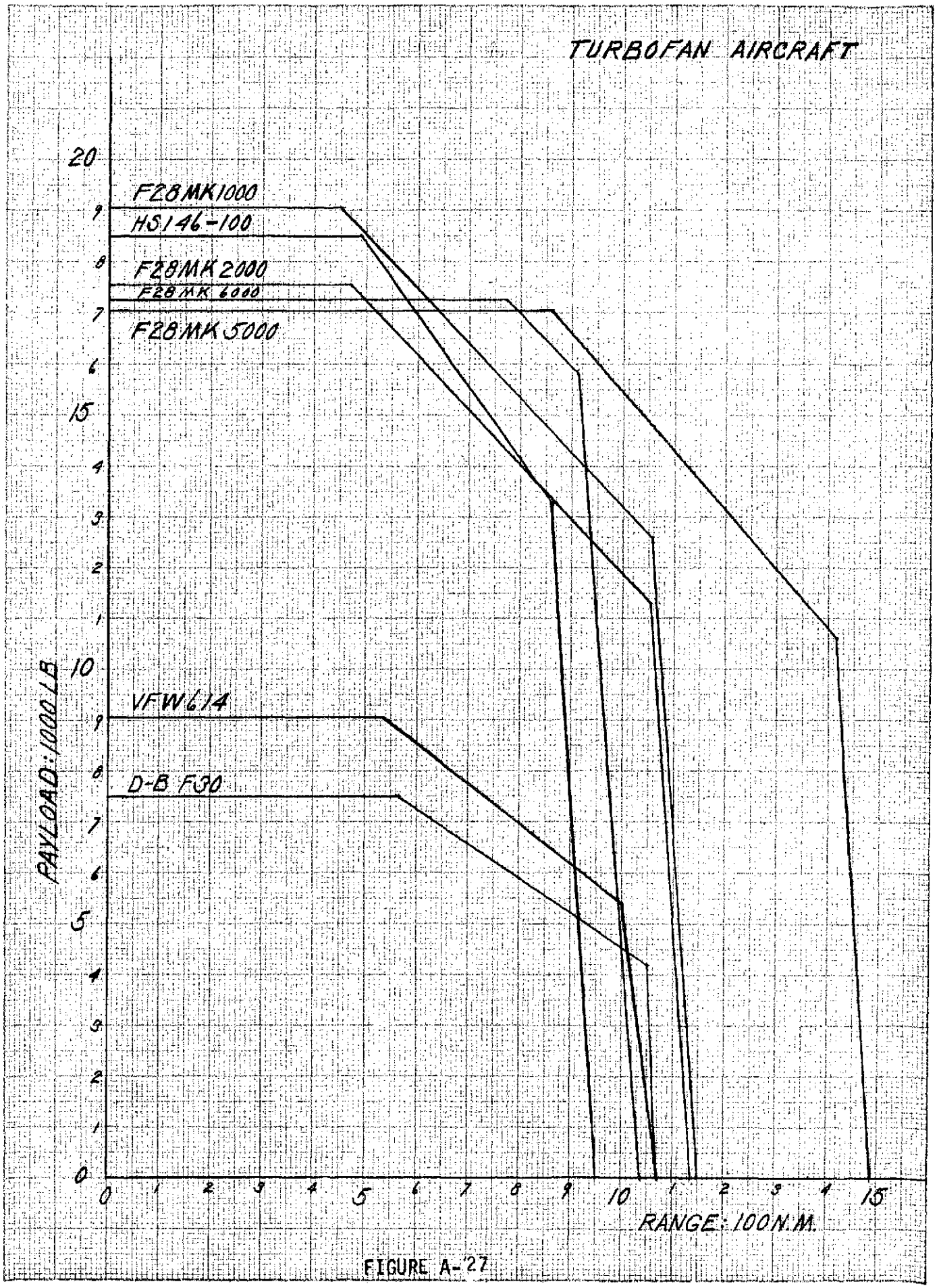

TURBOFAN AIRCRAFT
F28MK1000
HS146-100
F28MK2000
F28MK6000
F28MK5000
VFW614
D-B F30
PAYLOAD: 1000 LB
RANGE: 100 N.M.

FIGURE A-27

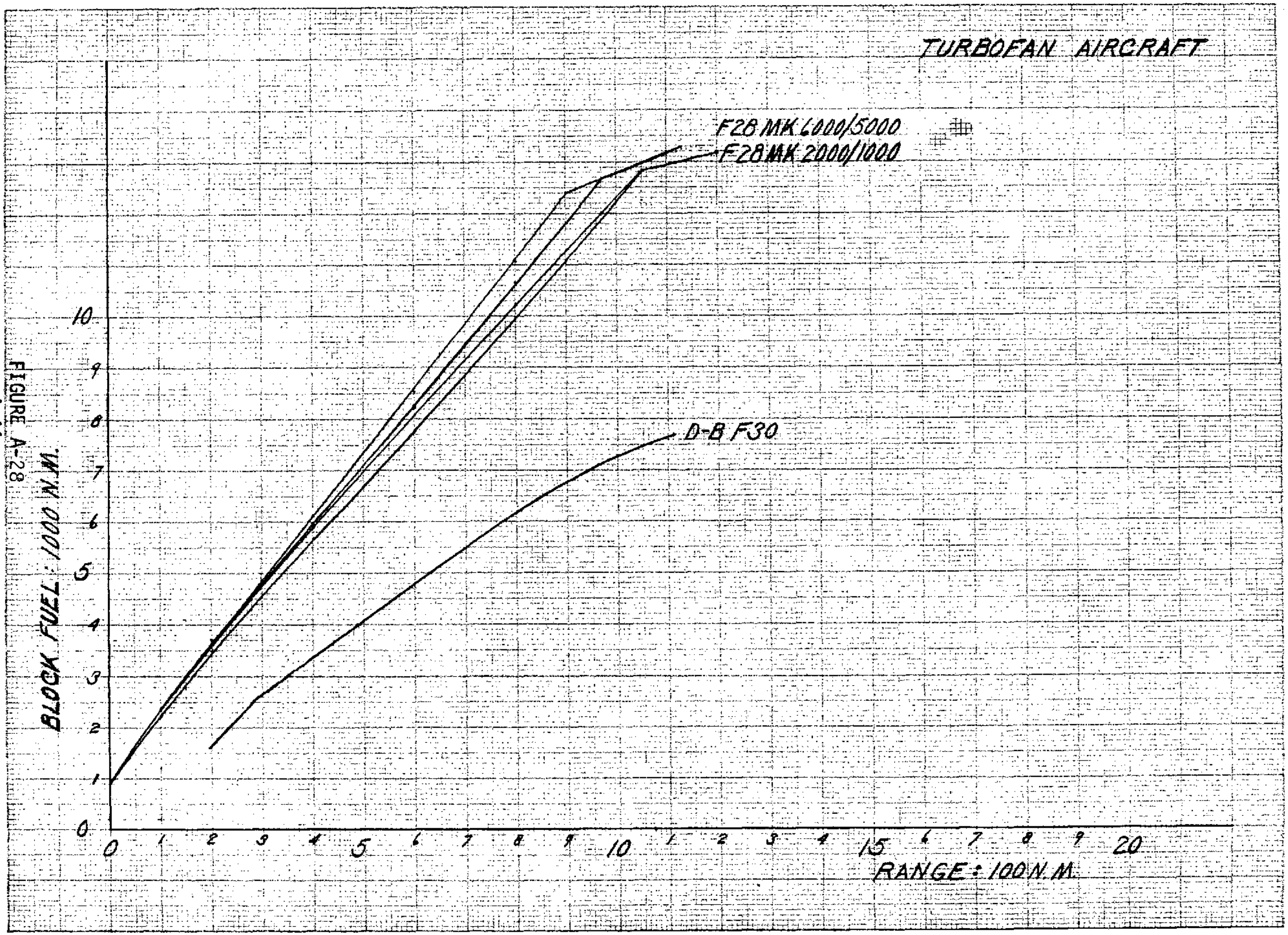


FIGURE A-28

A-44

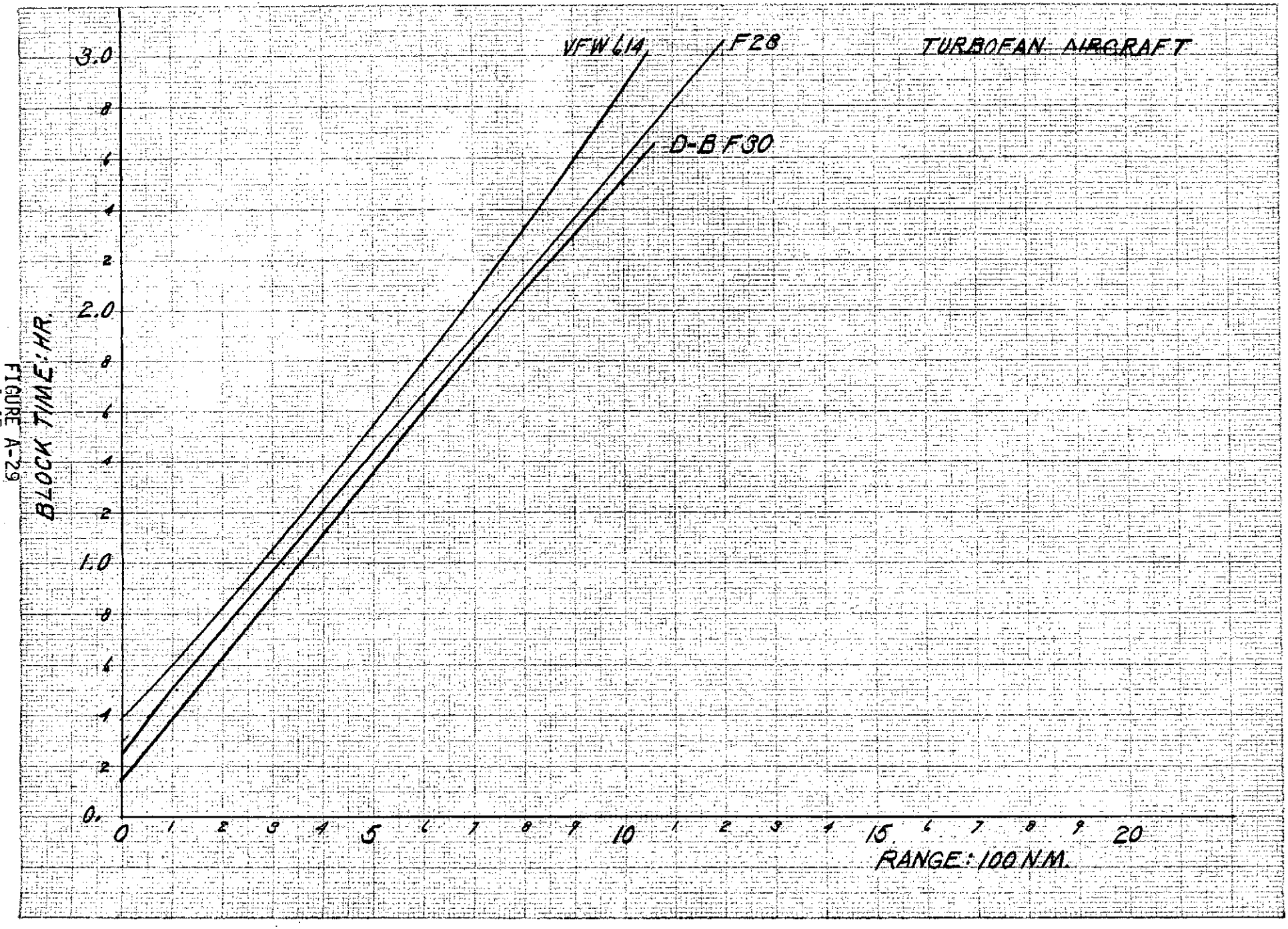


FIGURE A-29
A-45

Table A-9

THREE-VIEW & SUPPORTING DRAWINGS

DWG.NO. (Fig. No.)	TITLE	STUDY PHASE	DESCRIPTION			
			Psgr. (No.)	Field Length (Ft)	Range (N.Mi.)	Engine
J112133A (A-30)	General Arrangement (Baseline)	Parametric	50	4,500	2 x 250	F.P. Fan (2)
J112146 (A-31)	General Arrangement	Parametric	30	4,500	2 x 250	F.P. Fan (2)
J112148 (A-32)	General Arrangement	Parametric	70	4,500	2 x 250	F.P. Fan (2)
J112184 (A-33)	General Arrangement	Parametric	50	4,500	2 x 250	V.P. Fan (2)
J112141A (A-34)	General Arrangement	Parametric	50	4,500	2 x 250	Turboprop (2)
J112207A (A-35)	General Arrangement (Basepoint)	Design	50	4,500	1 x 850	F.P. Fan (2)
J112187A (A-36)	General Arrangement	Design	50	4,500	1 x 850	Turboprop (2)
J112219 (A-37)	General Arrangement	Design	50	4,500	1 x 850	Avco-Lycoming (4) ALF502
J112248 (A-38)	General Arrangement (Shrink)	Design & Evaluation	42	<4,500	--	F.P. Fan (2)
J112249 (A-39)	General Arrangement (Str/Shr. Base)	Design & Evaluation	50	4,500	1 x 850	F.P. Fan (2)
J112250 (A-40)	General Arrangement (Stretch)	Design & Evaluation	70	>4,500	--	F.P. Fan (2)
J112239 (A-41)	Fuselage Study (Stretch/Shrink)	Design & Evaluation				
J112128B (A-42)	Fuselage Cross Section (Cusped)	Design & Evaluation				
J112220 (A-43)	Alt. Body Section (Circular)	Design & Evaluation				
J112139 (A-44)	Fwd. Engine Arrangements	Design & Evaluation				

CHARACTERISTICS DATA

ITEM	WING	HORIZONTAL STABILIZER	VERTICAL STABILIZER
WING, SQ. FT.	497.	167	110 Ⓐ
ASPECT RATIO	9.0	5.0	.80
TAPER RATIO	.30	.35	.80
SWEEP, c/4	4°45'	7°20'	43°30'
DIHEDRAL	+5°	0°	–
T/C, %	YC-15	DC-9	DC-9
TAIL VOLUME			

FOR FUSELAGE CROSS-SECTION, SEE J 112128.
FOR FUSELAGE GEOMETRY, SEE J 112126.

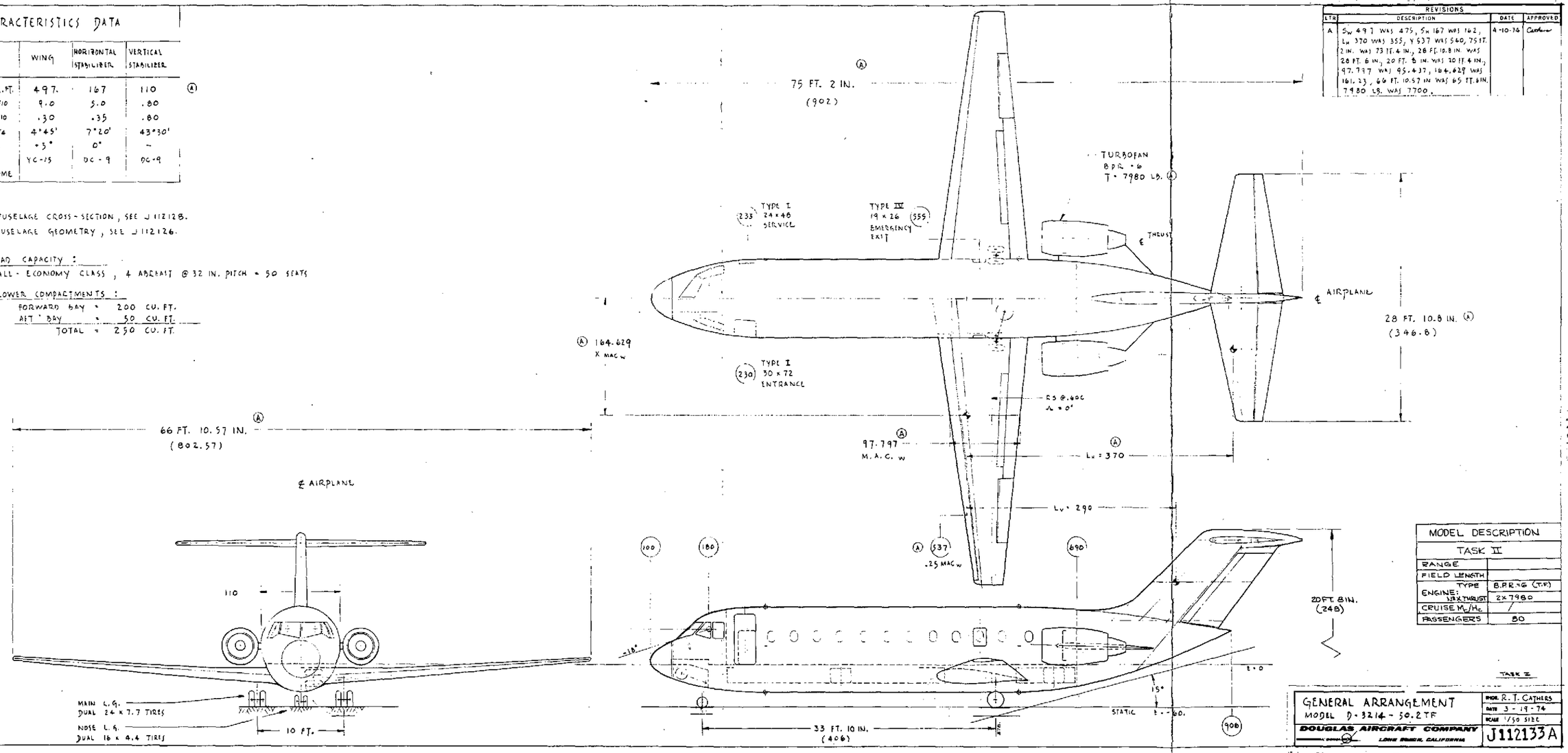
PAYLOAD CAPACITY :

ALL-ECONOMY CLASS, 4 ABREAST @ 32 IN. PITCH = 50 SEATS

LOWER COMPARTMENTS :

FORWARD BAY =	200 CU. FT.
AFT BAY =	50 CU. FT.
TOTAL =	250 CU. FT.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	S_W 497 WAS 475, S_H 167 WAS 162, L_H 370 WAS 355, Y_{537} WAS 540, 75 FT. 2 IN. WAS 73 FT. 4 IN., 28 FT. 10.8 IN. WAS 28 FT. 6 IN., 20 FT. 8 IN. WAS 20 FT. 4 IN., 97.797 WAS 95.437, 164.629 WAS 161.23, 66 FT. 10.57 IN. WAS 65 FT. 8 IN. 7980 LB. WAS 7700.	4-10-74	



MODEL DESCRIPTION	
TASK II	
RANGE	
FIELD LENGTH	
ENGINE: TYPE	B.P.R.=6 (T.F.)
ENGINE: NO. X THRUST	2 x 7980
CRUISE M_c/H_c	/
PASSENGERS	80

TASK II

GENERAL ARRANGEMENT
MODEL D-3214-50.2TF

ENGR. R. T. CATHERS
DATE 3-19-74
SCALE 1/50 SIZE
DOUGLAS AIRCRAFT COMPANY LONG BEACH, CALIFORNIA
J112133A

FIGURE A-30

FOLDOUT FRAME 1

ORIGINAL PAGE IS OF POOR QUALITY

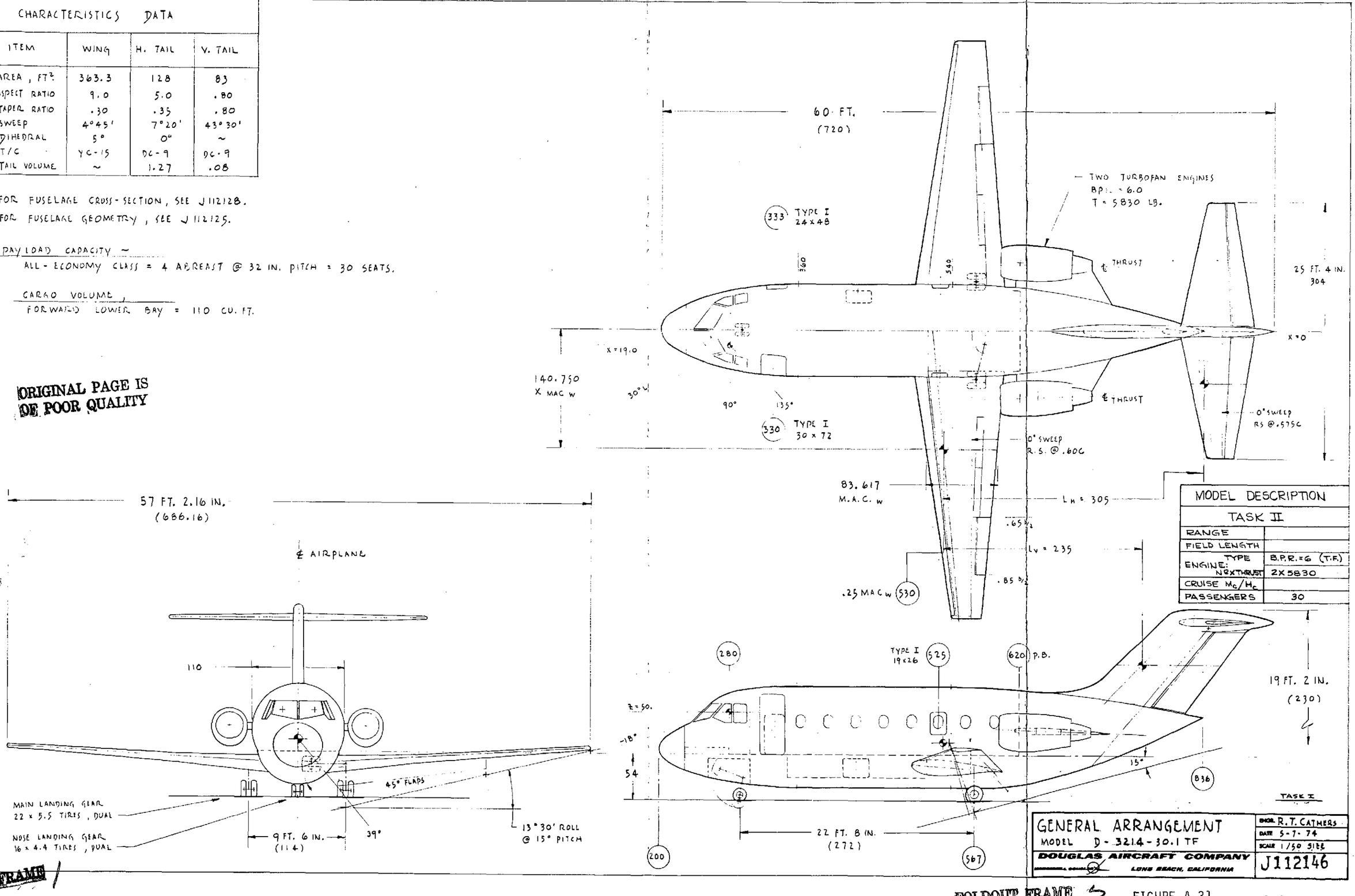
FOLDOUT FRAME 2

CHARACTERISTICS DATA			
ITEM	WING	H. TAIL	V. TAIL
AREA, FT²	363.3	128	83
ASPECT RATIO	9.0	5.0	.80
TAPER RATIO	.30	.35	.80
SWEEP	4°45'	7°20'	43°30'
DIHEDRAL	5°	0°	~
T/C	YC-15	DC-9	DC-9
TAIL VOLUME	~	1.27	.08

FOR FUSELAGE CROSS-SECTION, SEE J112128.
FOR FUSELAGE GEOMETRY, SEE J112125.

PAYLOAD CAPACITY ~
ALL-ECONOMY CLASS = 4 ABREAST @ 32 IN. PITCH = 30 SEATS.

CARGO VOLUME,
FORWARD LOWER BAY = 110 CU. FT.



FOLDOUT FRAME 1

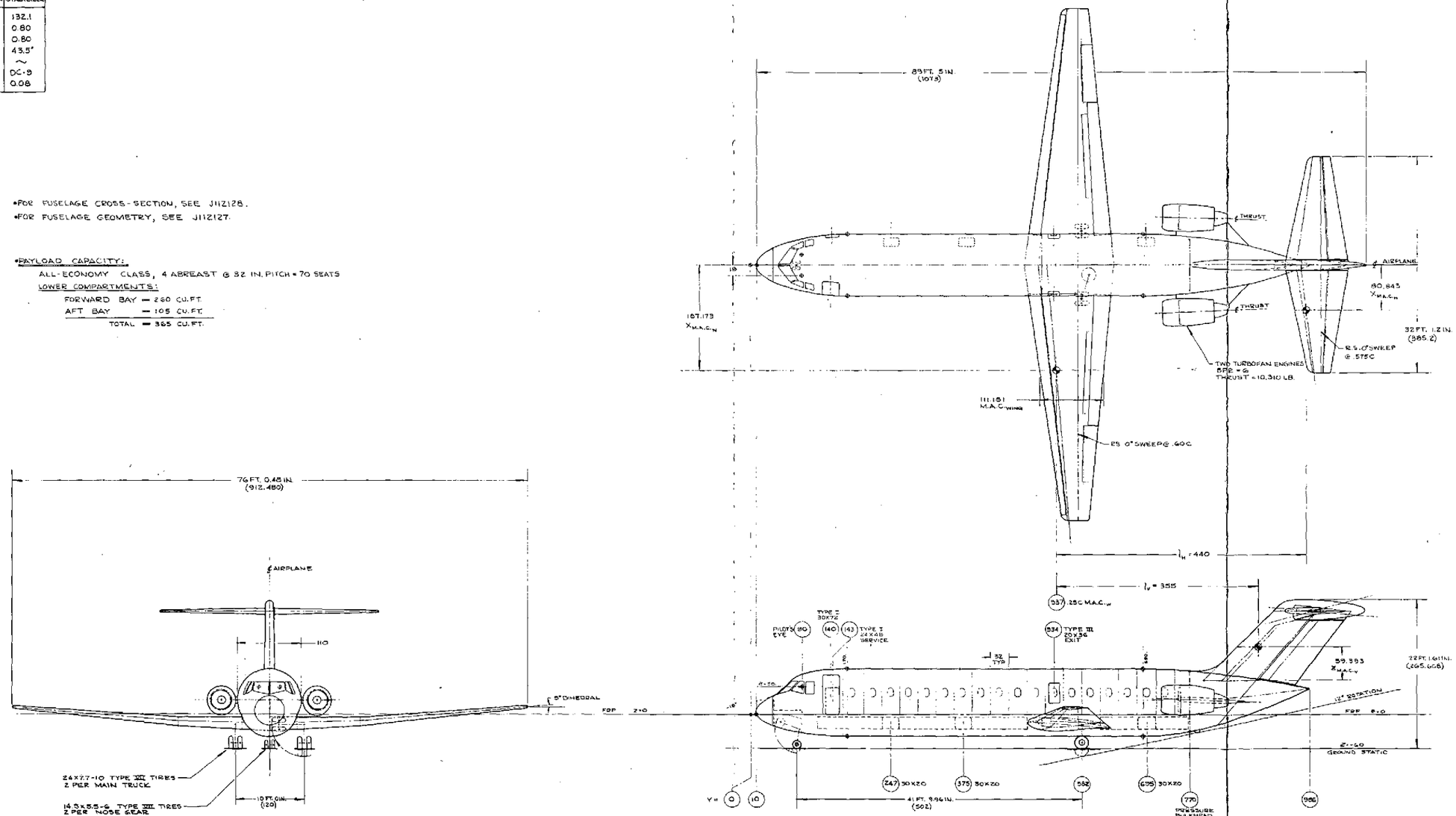
FOLDOUT FRAME 2

FIGURE A-31

CHARACTERISTICS DATA			
ITEM	WING	HORIZONTAL STABILIZER	VERTICAL STABILIZER
WING, SQ FT.	642.4	206.2	132.1
ASPECT RATIO	9.0	5.0	0.80
TAPER RATIO	0.30	0.35	0.80
SWEEP, $\frac{c}{4}$	4°33'	7°45'	43.5°
DIHEDRAL	+5°	0°	~
T/C, %	YC-15	DC-9	DC-9
TAIL VOLUME	~	1.27	0.08

•FOR FUSELAGE CROSS-SECTION, SEE J112128.
•FOR FUSELAGE GEOMETRY, SEE J112127.

•PAYLOAD CAPACITY:
ALL-ECONOMY CLASS, 4 ABREAST @ 32 IN. PITCH = 70 SEATS
LOWER COMPARTMENTS:
FORWARD BAY — 260 CU.FT.
AFT BAY — 105 CU.FT.
TOTAL — 365 CU.FT.



MODEL DESCRIPTION	
TASK II	
RANGE	
FIELD LENGTH	
ENGINES: TYPE	D.F.E.2-G (TF)
ENGINES: THRUST/ENG	2 X 10,310 LBS.
CRUISE M/H_c	
PASSENGERS	70

GENERAL ARRANGEMENT — MODEL D-3214-70.1 TF	TASK II
DOUGLAS AIRCRAFT COMPANY	DRN A. J. TESTA
	DATE 5-10-74
	SCALE 1/50 SIZE
	J112148

FIGURE A-32

CHARACTERISTICS DATA

ITEM	WING	HORIZONTAL STABILIZER	VERTICAL STABILIZER
WING, SQ.FT.	450.	144.5	94.8
ASPECT RATIO	9.0	5.0	0.8
TAPER RATIO	0.3	0.35	0.8
SWEEP, ¼	4°45'	6°15'	43°30'
DIHEDRAL	+5°	0°	—
T/C, %	YC-15	DC-9	DC-9
TAIL VOLUME	—	1.27	0.08

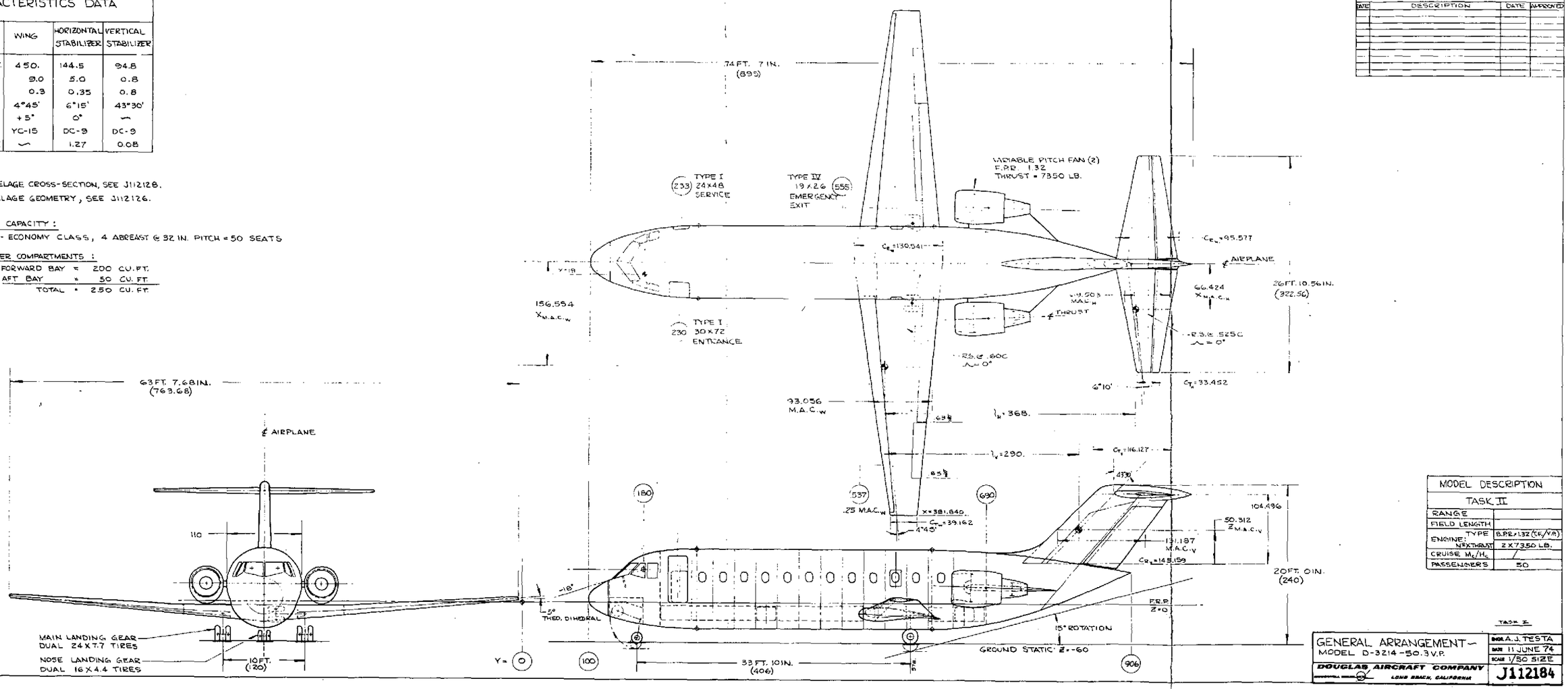
FOR FUSELAGE CROSS-SECTION, SEE J112128.
FOR FUSELAGE GEOMETRY, SEE J112126.

PAYLOAD CAPACITY:

ALL-ECONOMY CLASS, 4 ABREAST @ 32 IN. PITCH = 50 SEATS

LOWER COMPARTMENTS:

FORWARD BAY =	200 CU.FT.
AFT BAY =	50 CU.FT.
TOTAL =	250 CU.FT.



REVISIONS			
DATE	DESCRIPTION	DATE	APPROVED

MODEL DESCRIPTION	
TASK II	
RANGE	
FIELD LENGTH	
ENGINE: TYPE	B.P.R. 1.32 (T.F./V.P.)
ENGINE: N×THRUST	2 X 7350 LB.
CRUISE M_c/H_c	
PASSENGERS	50

GENERAL ARRANGEMENT — MODEL D-3214-50.3 V.P.

DOUGLAS AIRCRAFT COMPANY, LONG BEACH, CALIFORNIA

DWG. A. J. TESTA
DATE 11 JUNE 74
SCALE 1/50 SIZE
J112184

FIGURE A-33

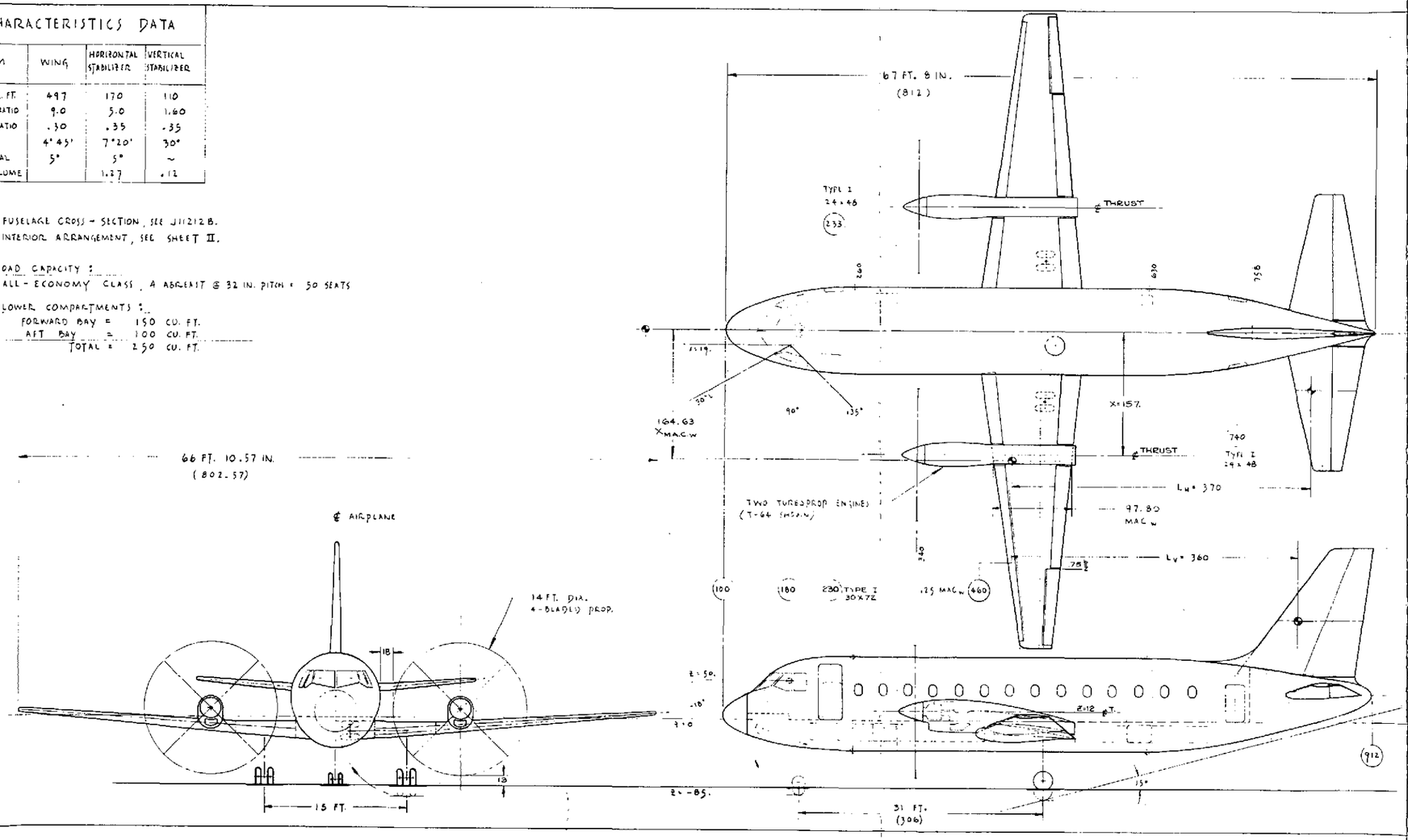
CHARACTERISTICS DATA

ITEM	WING	HORIZONTAL STABILIZER	VERTICAL STABILIZER
AREA, SQ. FT.	497	170	110
ASPECT RATIO	9.0	5.0	1.60
TAPER RATIO	.30	.35	.35
SWEEP	4°45'	7°20'	30°
DIHEDRAL	5°	5°	~
TAIL VOLUME		1.27	.12

FOR FUSELAGE CROSS-SECTION, SEE J112128.
FOR INTERIOR ARRANGEMENT, SEE SHEET II.

PAYLOAD CAPACITY :
ALL-ECONOMY CLASS, AISLE SEAT @ 32 IN. PITCH = 50 SEATS

LOWER COMPARTMENTS :
FORWARD BAY = 150 CU. FT.
AFT BAY = 100 CU. FT.
TOTAL = 250 CU. FT.



REVISIONS			
SYM	DESCRIPTIONS	DATE	APPROVAL
A	RELOCATED ENGINE & THRUST X=157. WAS X=163., Z=12 WAS Z=16, CHANGES PROPELLER DIA. 14 FT. WAS 15 FT., AIL @ .75% WAS .80%, ADDED DIMS 1360	5-14-74	A. J. TESTA

TASK I

GENERAL ARRANGEMENT	DSG. R. T. CATHERS
MODEL D-3215-50-1 T.P.	DATE 4-17-74
DOUGLAS AIRCRAFT COMPANY LONG BEACH, CALIFORNIA	SCALE 1/50 SIZE J112141A

FIGURE A-34

CHARACTERISTICS DATA

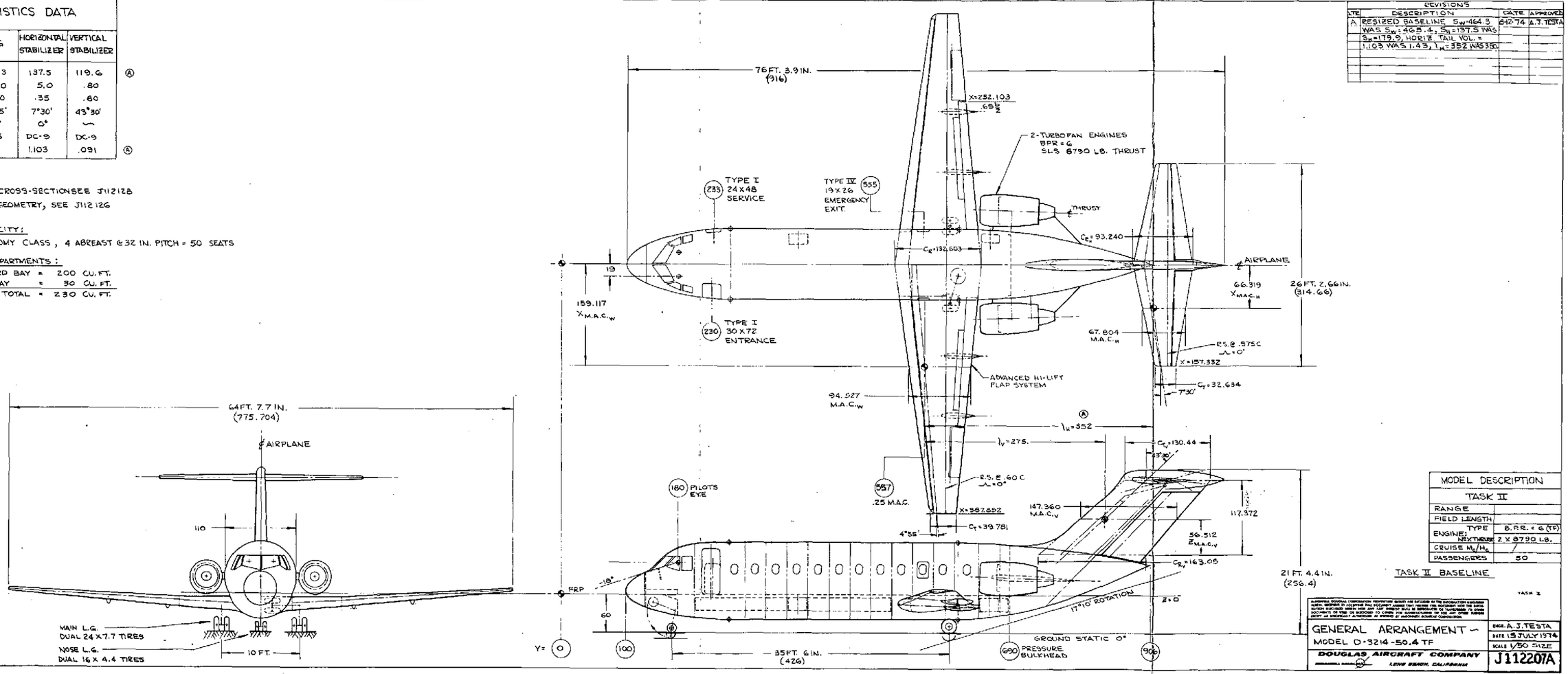
ITEM	WING	HORIZONTAL STABILIZER	VERTICAL STABILIZER	
WING, SQ. FT.	464.3	137.5	119.6	Ⓐ
ASPECT RATIO	9.0	5.0	.80	
TAPER RATIO	.30	.35	.60	
SWEEP, $\frac{c}{4}$	4°55'	7°30'	43°30'	
DIHEDRAL	+5°	0°	—	
t/c, %	YC-15	DC-9	DC-9	
TAIL VOLUME	—	1.103	.091	Ⓐ

FOR FUSELAGE CROSS-SECTION SEE J112128
FOR FUSELAGE GEOMETRY, SEE J112126

PAYLOAD CAPACITY:
ALL - ECONOMY CLASS, 4 ABREAST @ 32 IN. PITCH = 50 SEATS

LOWER COMPARTMENTS:
FORWARD BAY = 200 CU. FT.
AFT BAY = 30 CU. FT.
TOTAL = 230 CU. FT.

REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED
A	RESIZED BASELINE S_W=464.3 WAS S_W=465.4, S_H=137.5 WAS S_H=179.9, HORIZ. TAIL VOL. = 1.103 WAS 1.43, l_H=352 WAS 350.	6-12-74	A.J. TESTA



MODEL DESCRIPTION	
TASK II	
RANGE	
FIELD LENGTH	
ENGINE: TYPE	B.P.R. = 6 (TF)
ENGINE: NEXTRUST	2 X 8790 LB.
CRUISE M_o/H_o	/
PASSENGERS	50

TASK II BASELINE

GENERAL ARRANGEMENT — MODEL D-3214-50.4 TF	ENG. A. J. TESTA
DOUGLAS AIRCRAFT COMPANY LONG BEACH, CALIFORNIA	DATE 15 JULY 1974
	SCALE 1/50 SIZE
	J112207A

FIGURE A-35

CHARACTERISTICS DATA

ITEM	WING	HORIZONTAL STABILIZER	VERTICAL STABILIZER	
AREA SQ.FT	498	154.9	143.2	Ⓐ
ASPECT RATIO	10.5	5.0	1.6	
TAPER RATIO	0.30	0.35	0.35	
SWEEP	4°35'	8°00'	30°	Ⓐ
DIHEDRAL	5°	5°	~	
TAIL VOLUME	~	1.27	0.12	

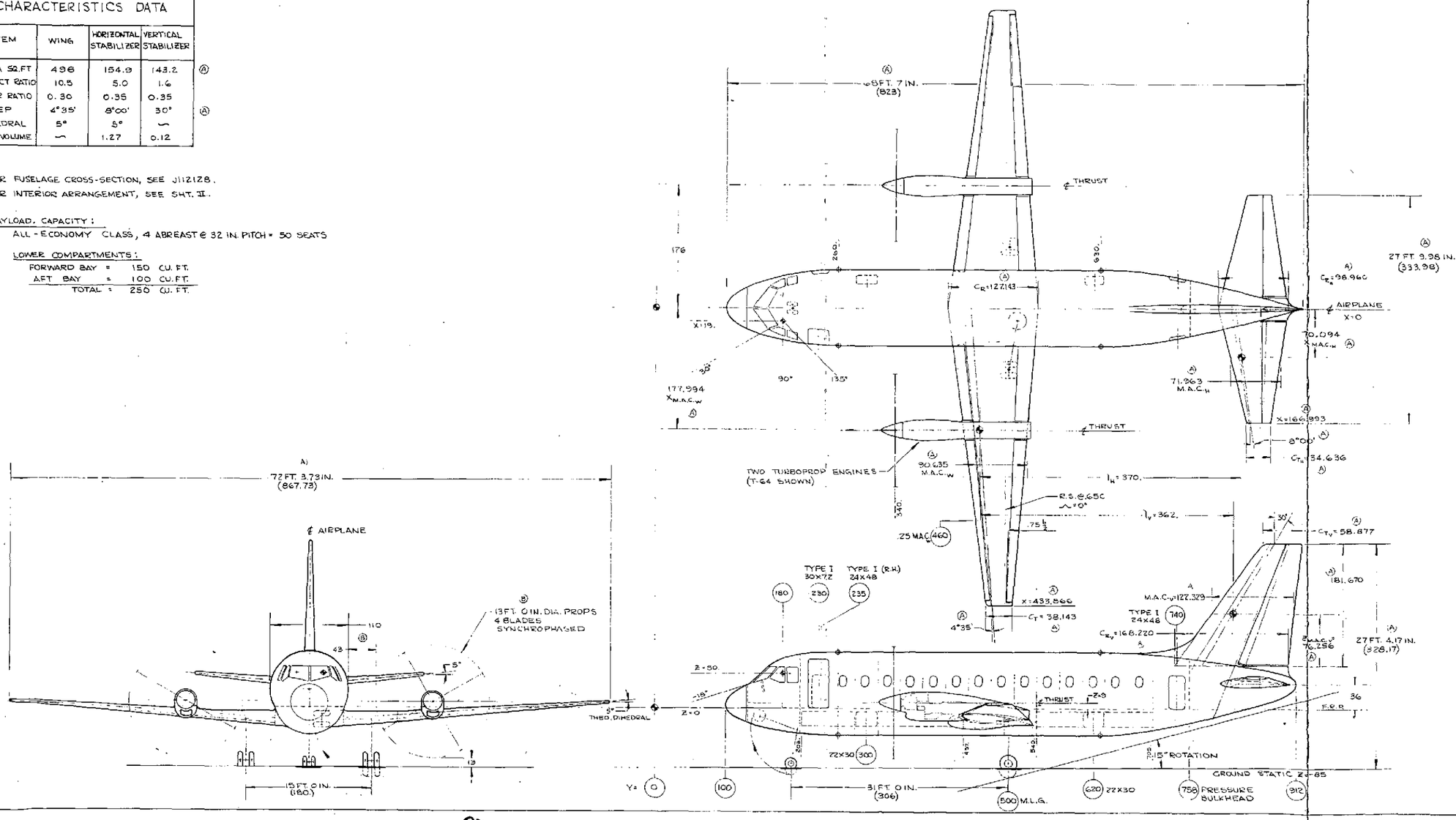
FOR FUSELAGE CROSS-SECTION, SEE J112128.
FOR INTERIOR ARRANGEMENT, SEE SHT. II.

PAYLOAD. CAPACITY:
ALL-ECONOMY CLASS, 4 ABREAST @ 32 IN. PITCH = 50 SEATS

LOWER COMPARTMENTS:

FORWARD BAY	=	150 CU. FT.
AFT BAY	=	100 CU. FT.
TOTAL	=	250 CU. FT.

REVISIONS			
SYM	DESCRIPTIONS	DATE	APPROVAL
A	AIRPLANE CHARACTERISTICS AND DIMENSIONS REVISED AS SHOWN PER AERO AVI. HB-74-008-RDW DTD 8-6-74.	8-8-74	A.J.TESTA
B	CHANGED DIMS., 13'0" DIA. PROP WAS 13'6", 43 WAS 40."	10-9-74	A.J.TESTA



GENERAL ARRANGEMENT — MODEL D-3215-50.2 TP	TASK I
DOUGLAS AIRCRAFT COMPANY LONG BEACH, CALIFORNIA	DSN. A.J. TESTA DATE 14 JUNE 74 SCALE 1/50 SIZE J112187B

FIGURE A-36

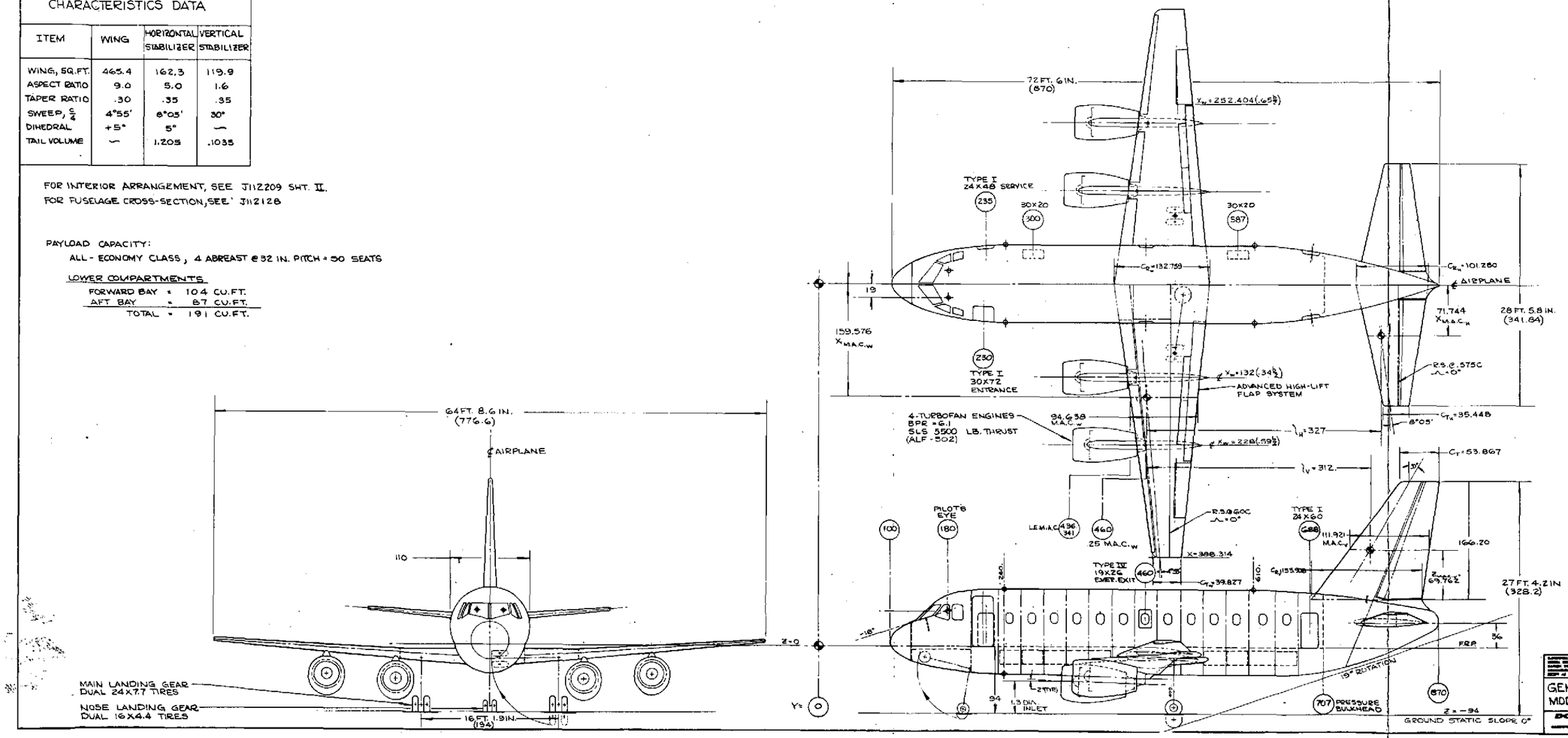
CHARACTERISTICS DATA

ITEM	WING	HORIZONTAL STABILIZER	VERTICAL STABILIZER
WING, SQ.FT.	465.4	162.3	119.9
ASPECT RATIO	9.0	5.0	1.6
TAPER RATIO	.30	.35	.35
SWEEP, $\frac{c}{4}$	4°55'	8°05'	30°
DIHEDRAL	+5°	5°	—
TAIL VOLUME	—	1.205	.1035

FOR INTERIOR ARRANGEMENT, SEE J112209 SHT. II.
FOR FUSELAGE CROSS-SECTION, SEE J112128

PAYLOAD CAPACITY:
ALL - ECONOMY CLASS, 4 ABREAST @ 32 IN. PITCH = 50 SEATS

LOWER COMPARTMENTS
FORWARD BAY = 104 CU.FT.
AFT BAY = 87 CU.FT.
TOTAL = 191 CU.FT.



REVISIONS			
LTR	DESCRIPTION	DATE	APPROVED

MODEL DESCRIPTION	
TASK II	
RANGE	850 NM
FIELD LENGTH	4500 FT.
ENGINE: TYPE	ALF-502
ENGINE: MAX THRUST	4 x 5500 LB.
CRUISE M_o/H_c	/
PASSENGERS	50

GENERAL ARRANGEMENT — MODEL D-3214-50.6 TF

DRWN A.J. TESTA
DATE 8-21-74
SCALE 1/50 SIZE E

DOUGLAS AIRCRAFT COMPANY
LONG BEACH, CALIFORNIA

J112219

FIGURE A-37

FOLDOUT FRAME 1

ORIGINAL PAGE IS OF POOR QUALITY

FOLDOUT FRAME 2

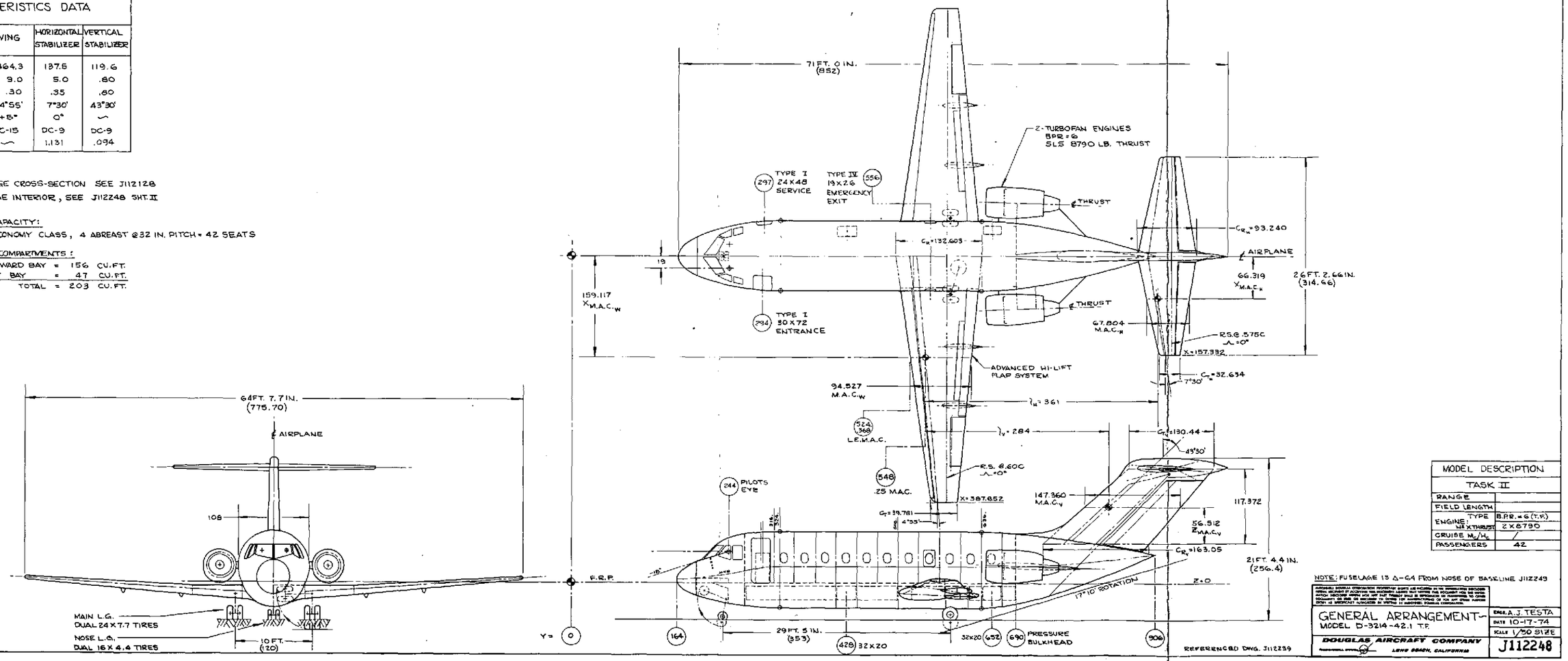
CHARACTERISTICS DATA

ITEM	WING	HORIZONTAL STABILIZER	VERTICAL STABILIZER
WING, SQ.FT.	464.3	187.5	119.6
ASPECT RATIO	9.0	5.0	.80
TAPER RATIO	.30	.35	.60
SWEEP, $\frac{c}{4}$	4°55'	7°30'	43°30'
DIHEDRAL	+5°	0°	~
T/C, %	YC-15	DC-9	DC-9
TAIL VOLUME	~	1.131	.094

FOR FUSELAGE CROSS-SECTION SEE J112128
FOR FUSELAGE INTERIOR, SEE J112248 SHT.II

PAYLOAD CAPACITY:
ALL - ECONOMY CLASS, 4 ABREAST @32 IN. PITCH = 42 SEATS

LOWER COMPARTMENTS:
FORWARD BAY = 156 CU.FT.
AFT BAY = 47 CU.FT.
TOTAL = 203 CU.FT.



MODEL DESCRIPTION	
TASK II	
RANGE	
FIELD LENGTH	
ENGINE: TYPE	B.P.R. = 6 (T.F.)
ENGINE: MIL THRUST	2X8790
CRUISE M_c/H_c	/
PASSENGERS	42

NOTE: FUSELAGE IS Δ-64 FROM NOSE OF BASELINE J112249

GENERAL ARRANGEMENT - MODEL D-3214-42.1 T.F.

ENGR. A.J. TESTA
DATE 10-17-74
SCALE 1/50 SIZE

DOUGLAS AIRCRAFT COMPANY LONG BEACH, CALIFORNIA

J112248

REFERENCED DWG. J112239

FIGURE A-38

FOLDOUT FRAME 1

ORIGINAL PAGE IS OF POOR QUALITY

FOLDOUT FRAME 2

CHARACTERISTICS DATA

ITEM	WING	HORIZONTAL STABILIZER	VERTICAL STABILIZER
WING, SQ FT.	464.3	137.5	119.6
ASPECT RATIO	9.0	5.0	.80
TAPER RATIO	.30	.35	.80
SWEEP, $\frac{c}{4}$	4°55'	7°30'	43°30'
DIHEDRAL	+5°	0°	—
$\frac{t}{c}$, %	YC-15	DC-9	DC-9
TAIL VOLUME	—	1.131	.094

FOR FUSELAGE CROSS-SECTION SEE J112128

FOR FUSELAGE GEOMETRY AND INTERIOR SEE J112126

PAYLOAD CAPACITY:

ALL - ECONOMY CLASS, 4 ABREAST @ 32 IN. PITCH = 50 SEATS

LOWER COMPARTMENTS:

FORWARD BAY =	200 CU. FT.
AFT BAY =	47 CU. FT.
TOTAL =	247 CU. FT.

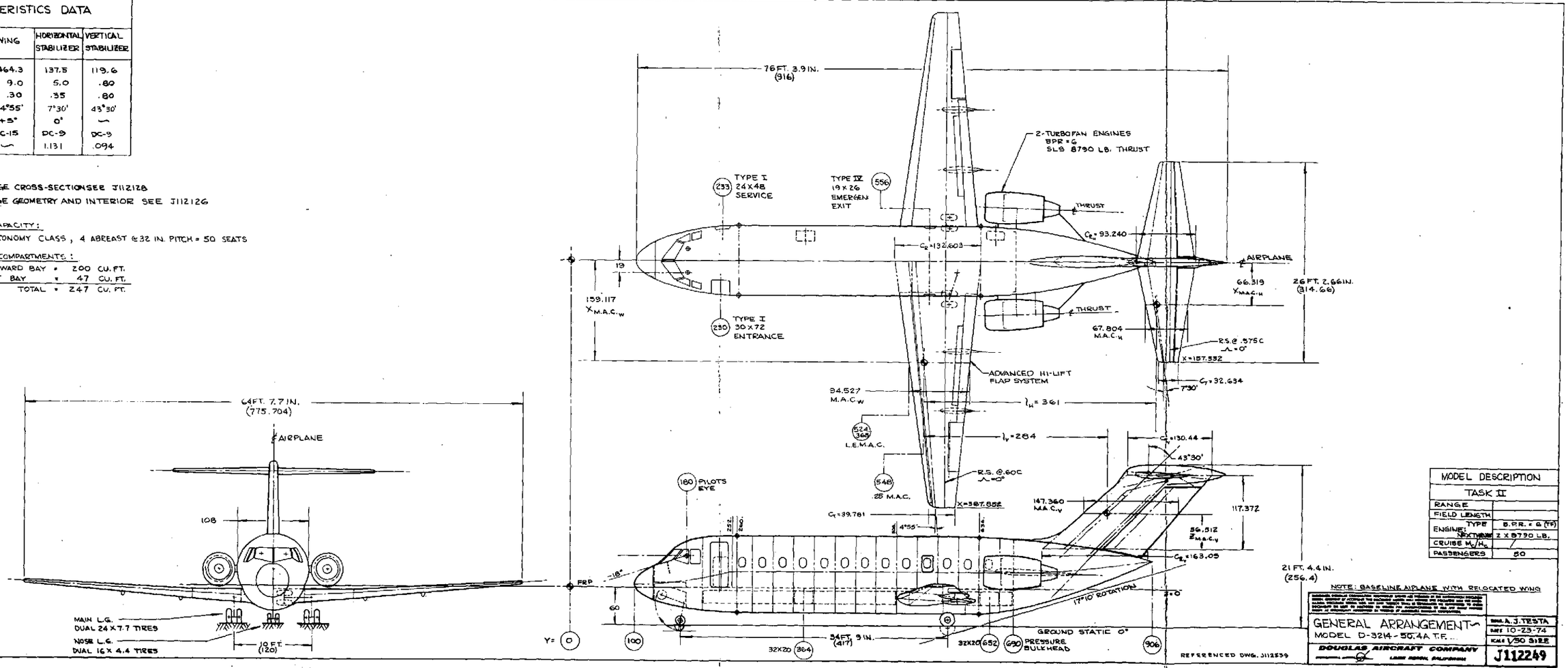


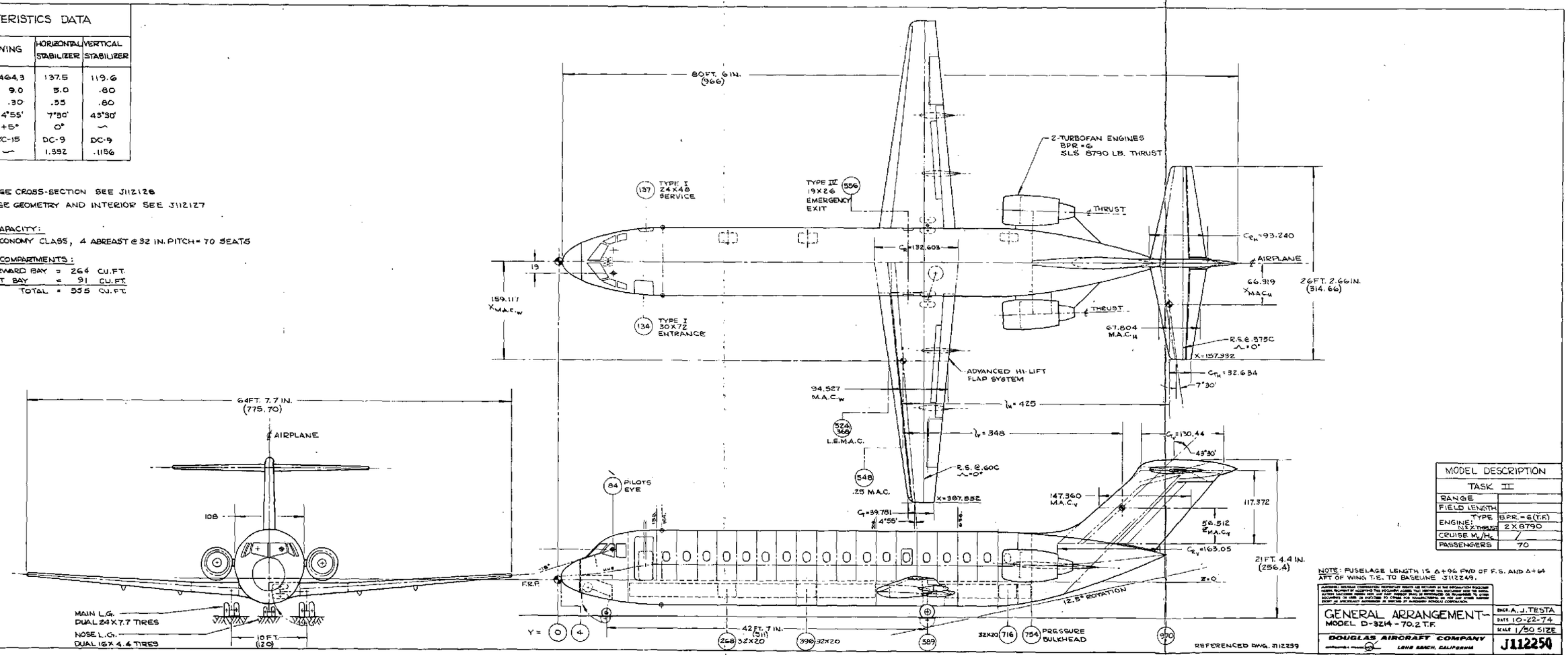
FIGURE A-39

CHARACTERISTICS DATA			
ITEM	WING	HORIZONTAL STABILIZER	VERTICAL STABILIZER
WING, SQ.FT.	464.3	137.5	119.6
ASPECT RATIO	9.0	5.0	.80
TAPER RATIO	.30	.55	.80
SWEEP, $\frac{c}{4}$	4°55'	7°30'	43°30'
DIHEDRAL	+5°	0°	~
T/C, %	YC-15	DC-9	DC-9
TAIL VOLUME	~	1.392	.1186

FOR FUSELAGE CROSS-SECTION SEE J112128
FOR FUSELAGE GEOMETRY AND INTERIOR SEE J112127

PAYLOAD CAPACITY:
ALL-ECONOMY CLASS, 4 ABREAST @ 32 IN. PITCH = 70 SEATS

LOWER COMPARTMENTS:
FORWARD BAY = 264 CU.FT.
AFT BAY = 91 CU.FT.
TOTAL = 355 CU.FT.

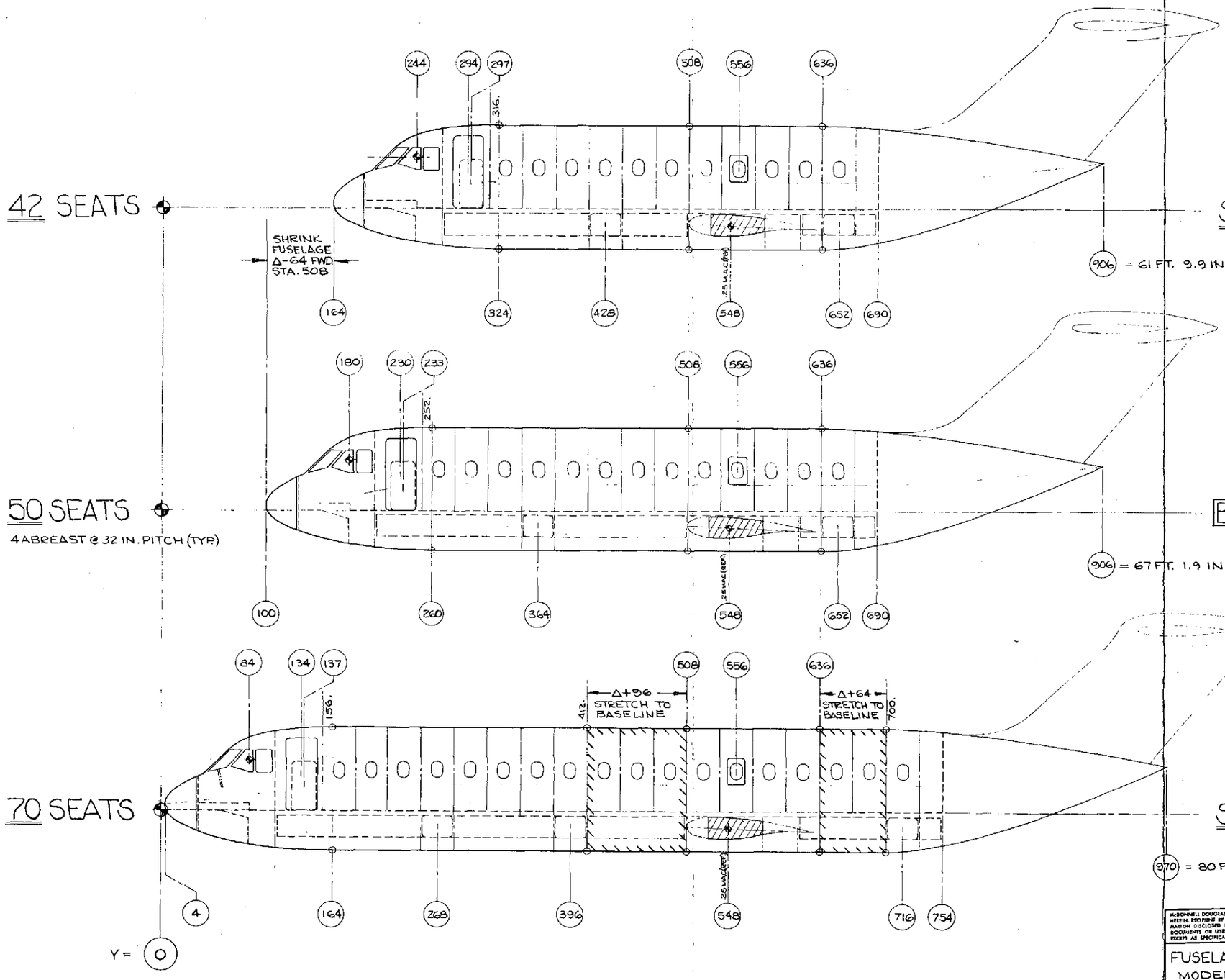


MODEL DESCRIPTION	
TASK II	
RANGE	
FIELD LENGTH	
ENGINE: TYPE	BPR = 6 (T.F.)
ENGINE: NO. X THRUST	2 X 8790
CRUISE M_o/H_c	/
PASSENGERS	70

NOTE: FUSELAGE LENGTH IS Δ + 96 FWD OF F.S. AND Δ + 64 AFT OF WING T.E. TO BASELINE J112249.

GENERAL ARRANGEMENT – MODEL D-3214-70.2 T.F.	ENG. A. J. TESTA
DOUGLAS AIRCRAFT COMPANY LONG BEACH, CALIFORNIA	DATE 10-22-74
	SCALE 1/50 SIZE
	J112250

FIGURE A-40



TASK II

FUSELAGE SHRINK/STRETCH STUDY-
MODELS D-3214-(NOTED)

ENGR. A. J. TESTA
DATE 9-19-74
SCALE 1/50 SIZE

DOUGLAS AIRCRAFT COMPANY
McDONNELL DOUGLAS
LONG BEACH, CALIFORNIA

J112239

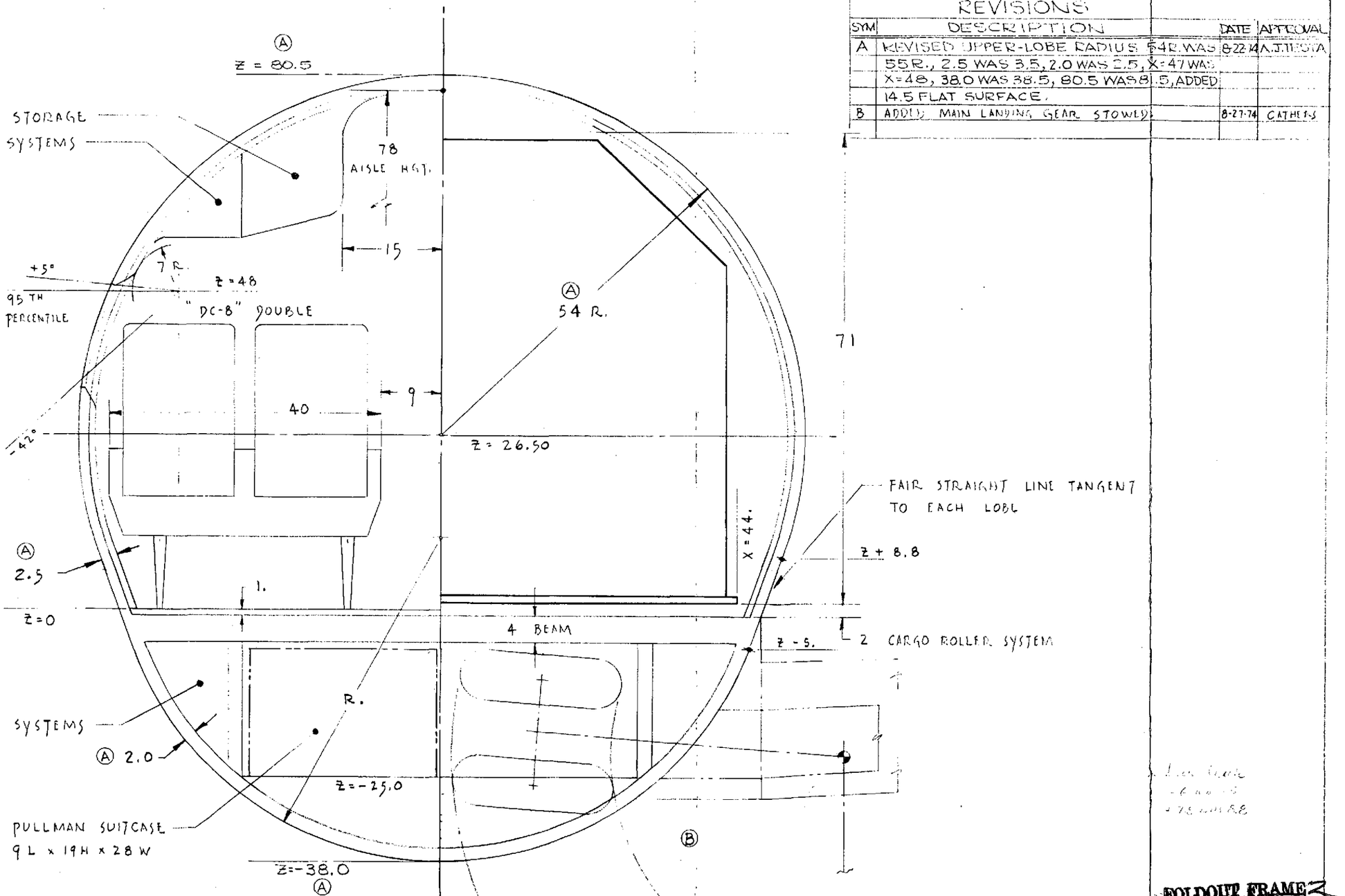
FOLDOUT FRAME

ORIGINAL PAGE IS OF POOR QUALITY

FIGURE A-41

FOLDOUT FRAME

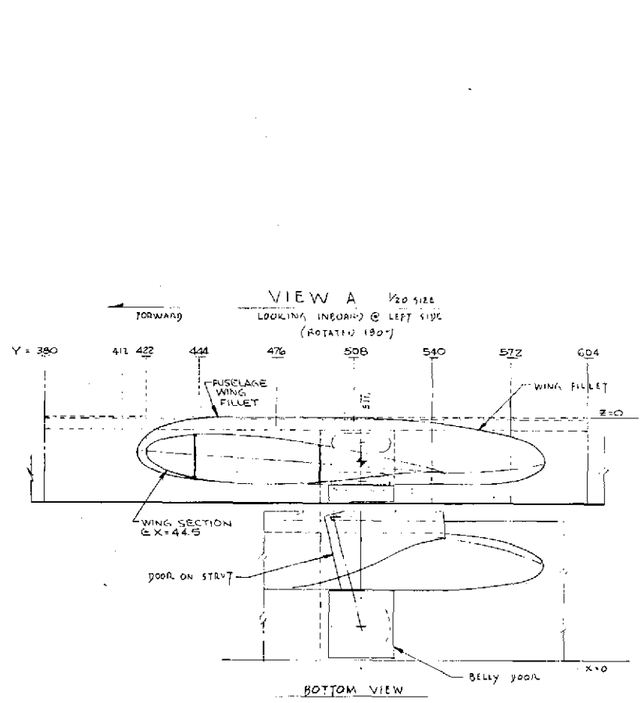
REVISIONS			
SYM	DESCRIPTION	DATE	APPROVAL
A	REVISED UPPER-LOBE RADIUS 54R. WAS 55R., 2.5 WAS 3.5, 2.0 WAS 2.5, X=47 WAS X=48, 38.0 WAS 38.5, 80.5 WAS 81.5, ADDED 14.5 FLAT SURFACE.	8-22-74	A.J. TESTA
B	ADDED MAIN LANDING GEAR STOWED	8-27-74	CATHERS

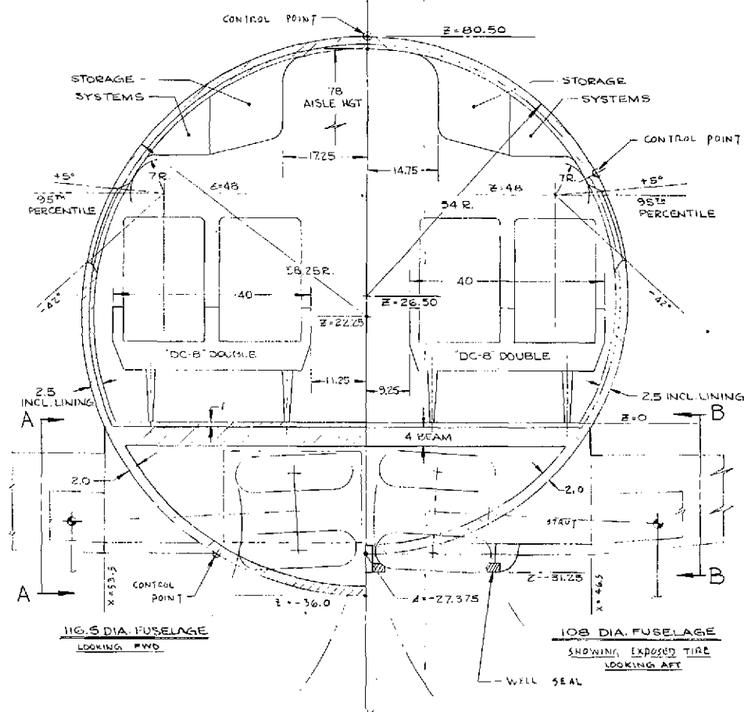


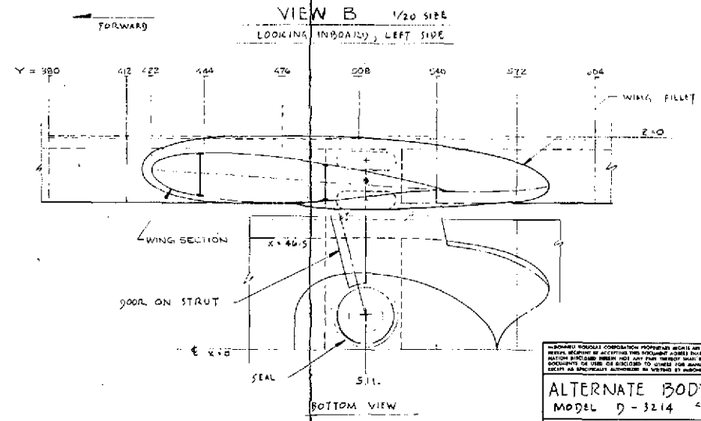
FOLDOUT FRAME 2

FOLDOUT FRAME 1

FUSELAGE CROSS-SECTION 4 ABREAST MODEL D-3214	ENGR. R. T. CATHERS
	DATE 3-5-74
	SCALE 1/10 SIZE
DOUGLAS AIRCRAFT COMPANY MCDONNELL DOUGLAS LONG BEACH, CALIFORNIA	J112128B







ALTERNATE BODY SECTIONS	ENGR. TESTA/CATHEY
MODEL D-3214	DATE 8-26-74
DOUGLAS AIRCRAFT COMPANY LONG BEACH, CALIFORNIA	SCALE NOTED J112220

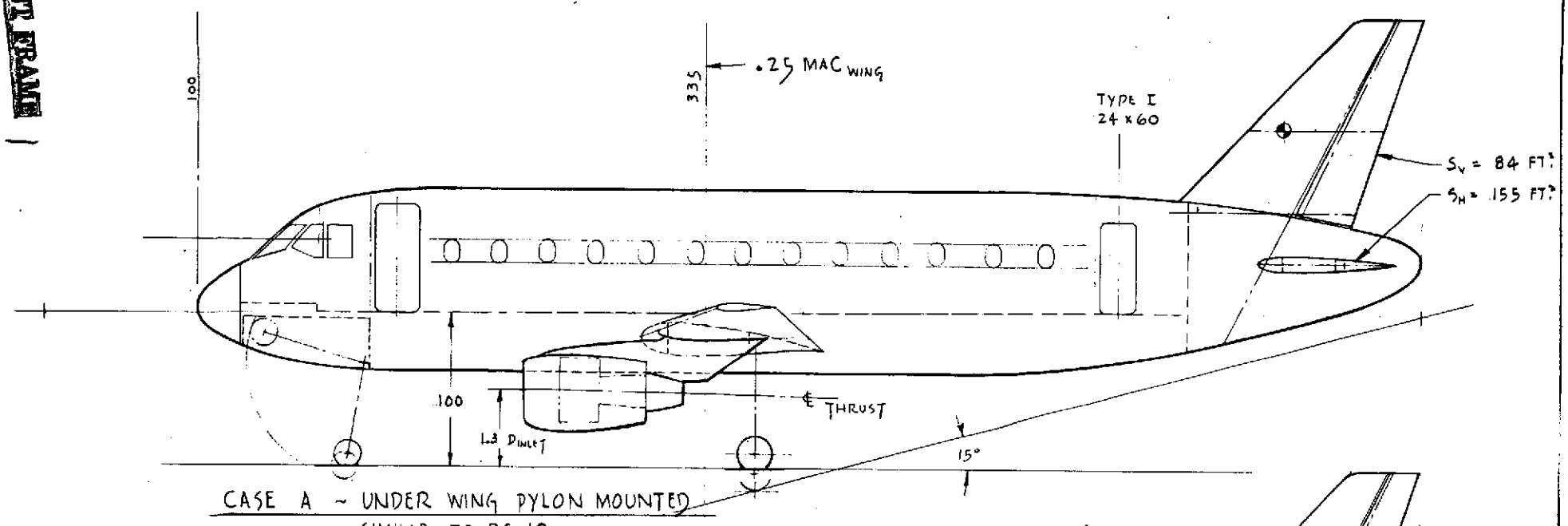
FIGURE A-43

FOLDOUT FRAME 1

FOLDOUT FRAME 2

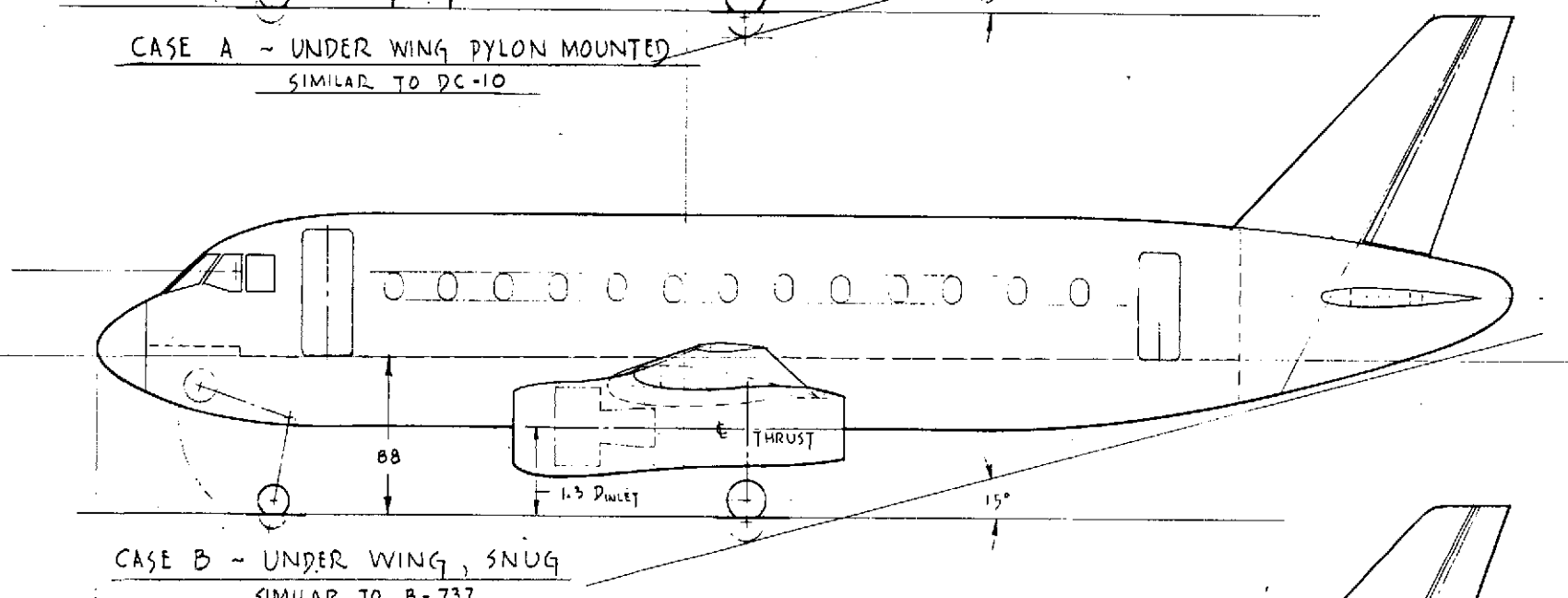
C-2

FOLDOUT FRAME 1



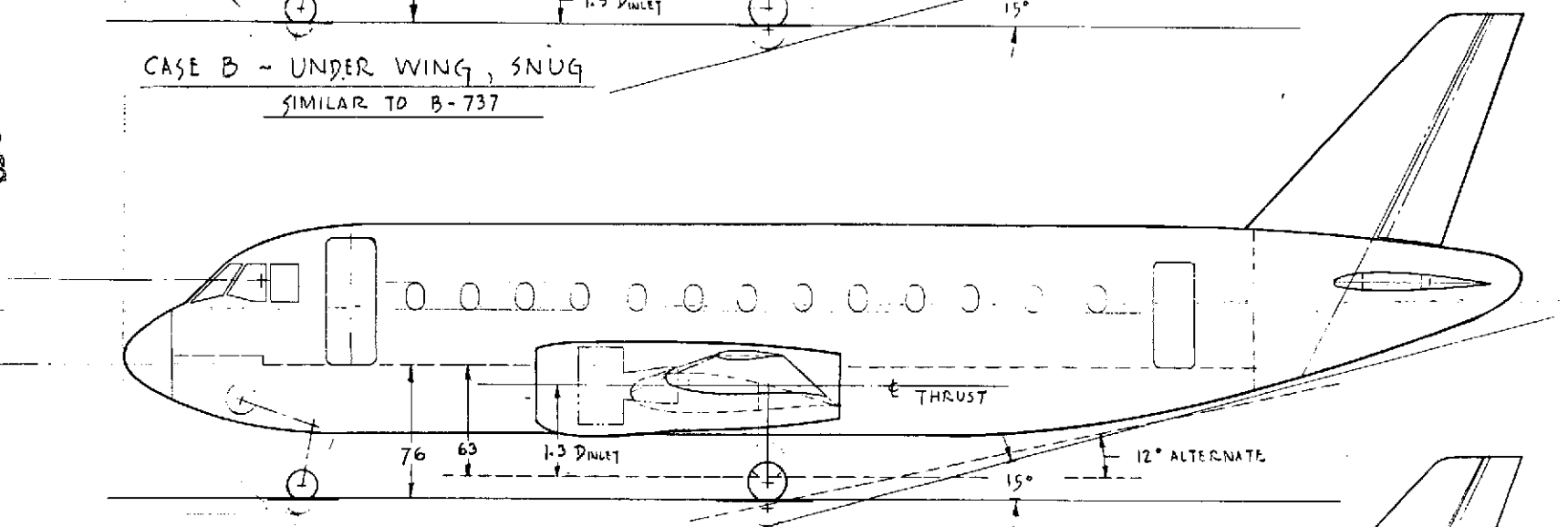
CASE A ~ UNDER WING PYLON MOUNTED

SIMILAR TO DC-10



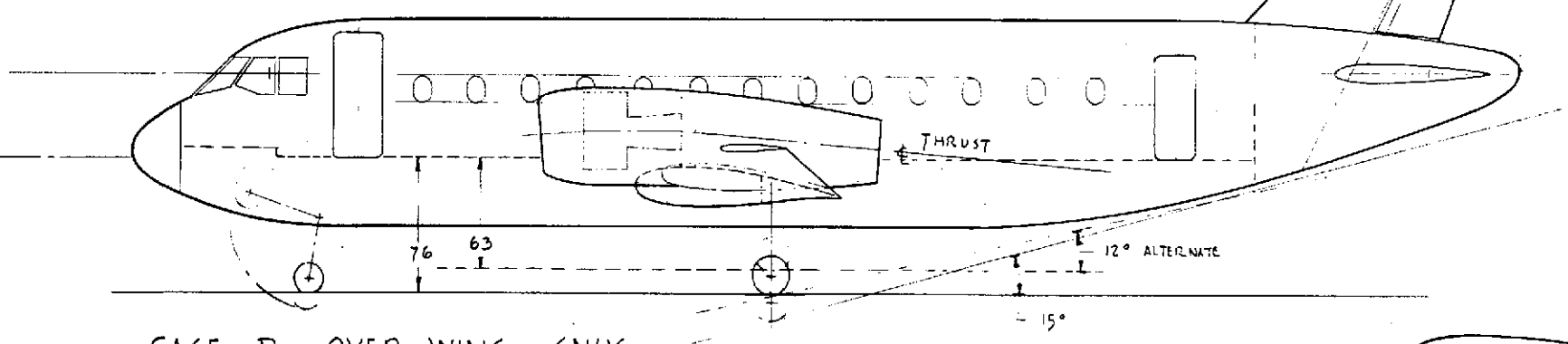
CASE B ~ UNDER WING, SNUG

SIMILAR TO B-737

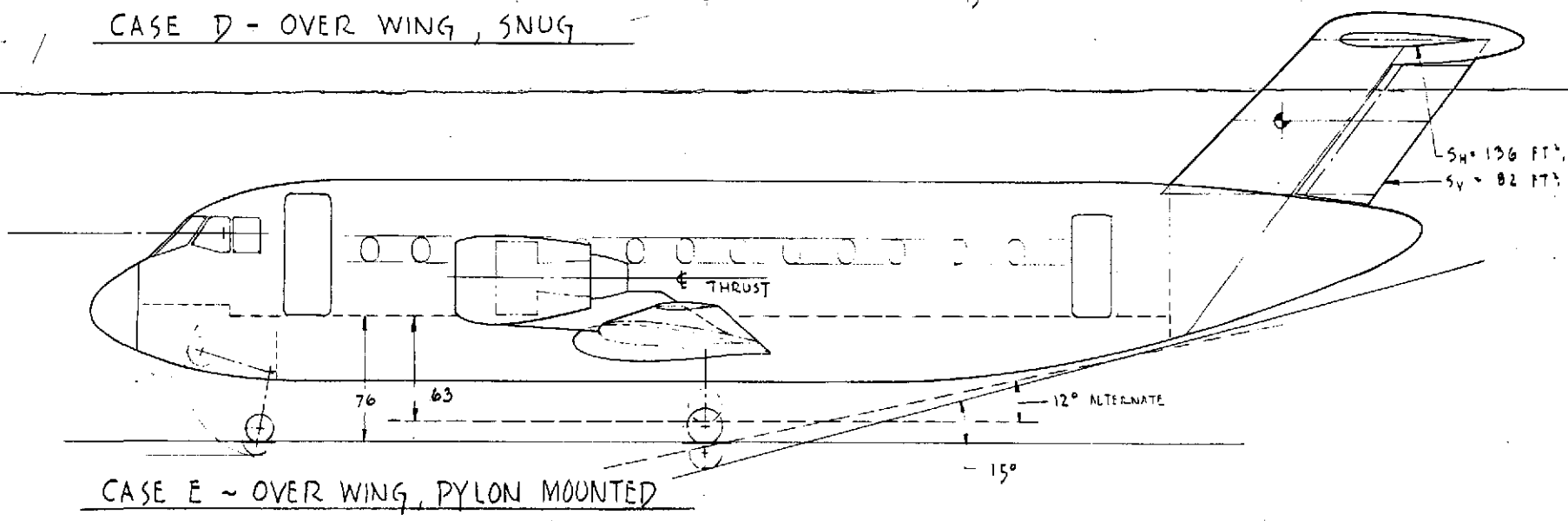


CASE C ~ SYMMETRICAL TO AIRFOIL

RING SPAR PER DC-10 CTR. POD.



CASE D - OVER WING, SNUG



CASE E ~ OVER WING, PYLON MOUNTED

NOTE :

1. ALL ENGINES LOCATED TO DROP VERTICALLY CLEARING THE WING BOX FRONT SPAR.
2. SEE J112133A FOR BASIC CONFIGURATION. (S_W = 497 FT²)
3. EMPENNAGE SIZE SHOWN TENATIVE ONLY.
4. ENGINE LOCATION @ X = 140.

FORWARD ENGINE ARRANGEMENTS MODEL D-3214-50 STUDY	ENGR. R. T. CATHERS DATE 4-12-74 SCALE 1/50 SIZE
DOUGLAS AIRCRAFT COMPANY MCDONNELL DOUGLAS — LONG BEACH, CALIFORNIA	J112139

FOLDOUT FRAME 2

FIGURE A-44

A.5 PROPELLER DESIGN AND SELECTION

This section describes the Douglas procedure used in the design and selection of the propeller. Conventional propeller formulae (Section A.5.1) are not suitable for use in integrating engine-propeller and airframe characteristics, in order to study a propeller family designed for a given set of takeoff and cruise requirements, and finally select the best engine-propeller combination.

Accordingly, unconventional propeller formulae (Section A.5.2) were developed, along with engine-propeller characteristics relating takeoff and flight thrust (Section A.5.3). In turn, these formulae were combined with the airframe cruise condition characteristics, thus interrelating the engine-propeller and airframe takeoff and flight requirements (Section A.5.4).

Equations #2, 3 and 4 (Section A.5.2) define the engine-propeller family; equations #8, 9 and 10 (Section A.5.4) relate these characteristics to the takeoff thrust-and power-to-weight ratios for takeoff and cruise.

Tables A-10, A-11 and A-12 show the data for a typical solution. Table A-10 shows two cruise conditions for a turboprop aircraft, derived from a turbofan configuration, assuming no change in gross weight or drag. Table A-11 shows the equations necessary for an engine-propeller family study, satisfying the requirements for a 4500 foot field length and a cruise condition of 0.60 Mach at 20,000 foot altitude. Table A-12 tabulates the results.

A.5.1 Conventional Propeller Formulae

Power Coefficient: $$C_P = \frac{(SHP)\ (\rho_{SL}/\rho)}{2000(N/1000)^3\ (D/10)^5}$$

Thrust Coefficient: $$C_T = \frac{F\ (\rho_{SL}/\rho)}{6600(N/1000)^2\ (D/10)^4}$$

Advance Ratio: $$J = 60\ V_C/ND$$

Efficiency: $$\eta = J\ (C_T/C_P)$$

Thrust: Takeoff, at $J \leq 0.8$, using design charts of (C_T/C_P) vs C_P

$$F = (C_T/C_P)\ \frac{33000(SHP)}{ND}$$

Thrust: Flight, at $J \geq 0.8$, using design charts of C_P vs. J with η as parameter

$$F = \eta\ (SHP)(550/V_C)$$

Where:

SHP = Shaft horsepower

ρ = Atmospheric density (slugs/ft^3)

N = Revolutions per minute

D = Propeller diameter (ft)

F = Thrust (lb)

V_C = Velocity, cruise (fps)

SL = Subscript; sea level, standard day

A.5.2 Unconventional Propeller Formulae

In order to relate takeoff and flight performance, the formulae above are expressed in a different form, as follows:

Propeller Disc Area: $S_\pi = (\pi/4)\, D^2$

Propeller Tip Speed: (static, fps) $V_T = (\pi/60)\, ND$

Advance Ratio: $J = \pi\,(V_C/V_T) = \pi\,(C_S M_C/V_T)$ (1)

Disc Load, Thrust: $\frac{F}{S_\pi} = 1289.6\,\rho\,(V_T/100)^2\,(C_T/C_p)C_p$, at $J \leq 0.8$ (2)

$= 1289.6\,\rho\,(V_T/100)^2\,(\eta/J)C_p$, at $J \geq 0.8$

Disc Load, Power: $\frac{SHP}{S_\pi} = 74.63\,(V_T/100)^3\,C_p$ (3)

Thrust/Power Ratio: $\frac{F}{SHP} = \frac{1727.9}{V_T}\,(C_T/C_p)$, at $J \leq 0.8$ (4)

$= \frac{1727.9}{V_T}\,\frac{\eta}{J}$, at $J \geq 0.8$

Where: C_S = Speed of sound (fps)

M_C = Mach number

A.5.3 Takeoff and Flight Relationship: Engine-Propeller

The unconventional formulae above are used to relate propeller performance in flight with that at static takeoff condition:

Atmospheric Density Ratio: $\sigma = \rho/\rho_R$

Horsepower Ratio: $$K_P = (SHP)_C/(SHP)_{RO} = \sigma \, C_{P_C} / C_{P_{RO}} \quad (5)$$

Thrust (Cruise/Takeoff): $$\frac{F_C}{F_{RO}} = \frac{K_P \, (\eta_C/J_C)}{(C_T/C_P)_{RO}} \quad (6)$$

Where: R = Subscript: reference altitude for takeoff, usually sea level standard or 90°F day

O = Subscript: Static condition

A.5.4 Takeoff and Flight Relationship: Engine-Propeller and Airframe

Excess Cruise Thrust: $(nF_C - D_C)(V_C/W_C) = 5$ fps

Relating the standard requirement above with the airframe characteristics, we obtain:

Cruise Thrust/Weight:
$$\frac{nF_C}{W_G} = \left[\frac{1}{(L/D)_C} + \frac{5}{C_S M_C}\right] \frac{W_C}{W_G} \qquad (7)$$

Using formulae #1 through #7 above, we obtain:

$$\frac{nF_{RO}}{W_G} = \frac{(C_T/C_P)_{RO}}{K_P (\eta/J)_C} \left[\frac{1}{(L/D)_C} + \frac{5}{C_S M_C}\right] \frac{W_C}{W_G} \qquad (8)$$

$$\frac{n(SHP)_{RO}}{W_G} = \frac{(V_T/1727.9)}{K_P(\eta/J)_C} \left[\frac{1}{(L/D)_C} + \frac{5}{C_S M_C}\right] \frac{W_C}{W_G} \qquad (9)$$

$$\frac{nS_\pi}{W_G} = \frac{7.7545}{V_T^2 \rho_R C_{RO}} \cdot \frac{1}{K_P (\eta/J)_C} \left[\frac{1}{(L/D)_C} + \frac{5}{C_S M_C}\right] \frac{W_C}{W_G} \qquad (10)$$

Where:

n	=	Number of engine-propeller power plants
D_C	=	Cruise drag (lb)
W_C	=	Cruise weight (lb)
$(L/D)_C$	=	Cruise lift/drag ratio
W_G	=	Gross or takeoff weight (lb)

A.5.5 Procedure for Propeller Selection

The procedure for solution is as follows:

1. Select several values of $C_{P_{RO}}$ and determine the corresponding values of $(C_T/C_P)_{RO}$ from the propeller take-off charts.

2. Using several values of V_T, compute F_{RO}/S_π , SHP_{RO}/S_π and $(F/SHP)_{RO}$.

3. Compute K_P, i.e., unitize the performance of a selected turboshaft engine family.

4. Compute nF_C/W_G for one or more cruise conditions, using airplane drag values and the minimum (or other) power margin.

5. At the design cruise conditions, compute C_{P_C} for each value of $C_{P_{RO}}$ and also J_C for each value of V_T.

6. Using the propeller cruise charts determine η_C at the design cruise conditions, for each combination of C_{P_C} and V_T.

7. Finally, compute nF_{RO}/W_G, $nSHP_{RO}/W_G$ and nS_π/W_G.

TABLE A-10

PROPELLER SELECTION

AIRPLANE		TURBOFAN	TURBOPROP	
CRUISE: ALT.	(FT)	23,000	20,000	20,000
M_c		0.685	0.60	0.50
S_W	(SQ.FT)	497	500	500
W/S_W	(LB/SQ.FT)	88.3	87.8	87.8
$f = C_{D_o} S_W$	(SQ.FT)	13.19	13.19	13.19
C_{D_o}		0.0265	0.0264	0.0264
q_c	(LB/SQ.FT)	283	246	171
C_L		0.3025	0.3460	0.4985
ΔC_{D_i}		0.0041	0.0053	0.0111
$5/C_S M_C$			0.0080	0.0096
nF_C/W_G			0.0966	0.0822
V_C	(FPS)		622	518
V_T	(FPS)		700	700
J_c			2.79	2.33
K_P			0.652	0.614

TABLE A-11

PROPELLER DESIGN PARAMETERS

$$\frac{nF_{RO}}{W_G} = (C_T/C_P)_{RO} \times \frac{2.79 \times 0.0966}{0.652\,\eta_C} = 0.4134\,\frac{(C_T/C_P)_{RO}}{\eta_C} = 0.3634 \text{ (required, 4500 ft.field)} \quad (8)$$

$$\frac{nSHP_{RO}}{W_G} = \frac{700}{1728} \times \frac{2.79 \times 0.0966}{0.652\,\eta_C} = \frac{0.1675}{\eta_C} \quad (9)$$

$$\frac{nS_\pi}{W_G} = \frac{7.755}{(700)^2 C_{P_{RO}} \rho_R} \times \frac{2.79 \times 0.0966}{0.652\,\eta_C} = \frac{0.00275}{\eta_C C_{P_O}} \quad (10)$$

$$F_{RO}S_\pi = 150.2\ C_{T_{RO}} \quad (2)$$

$$SHP_{RO}/S_\pi = 60.9\ C_{P_{RO}} \quad (3)$$

$$(F/SHP)_{RO} = 2.47\ (C_T/C_P)_{RO} \quad (4)$$

TABLE A-12

PROPELLER FAMILY CHARACTERISTICS

B x A.F.	3 x 80	4 x 80	4 x 100	4 x 140	4 x 180	4 x 220	
V_T	700	700	700	700	700	700	
C_{LI}	0.15	0.15	0.15	0.15	0.15	0.15	
$(C_T/C_P)0$	0.795	0.793	0.785	0.775	0.762	0.750	
C_{P_0}	0.185	0.243	0.298	0.393	0.459	0.525	
C_{T_0}	0.147	0.193	0.234	0.305	0.357	0.394	
η_C	0.904	0.901	0.893	0.880	0.865	0.853	
nF_{RO}/W_G	0.3634	0.3634	0.3634	0.3634	0.3634	0.3645	(8)
$nSHP_{RO}/W_G$	0.1854	0.1860	0.1878	0.1903	0.1937	0.1965	(9)
nS_π/W_G	0.01647	0.01257	0.01037	0.00796	0.00678	0.00615	(10)
F_{RO}/S_π	22.1	28.9	35.1	45.6	53.5	59.1	(2)
SHP_{RO}/S_π	11.28	14.78	18.2	23.9	28.5	31.9	(3)
$(F/SHP)_{RO}$	1.958	1.952	1.933	1.907	1.877	1.850	(4)
nF_{RO}	2 x 7975	2 x 7975	2 x 7975	2 x 7975	2 x 7975	2 x 7975	
$nSHP_{RO}$	2 x 4075	2 x 4080	2 x 4125	2 x 4180	2 x 4250	2 x 4310	
nS_π	2 x 361.5	2 x 276	2 x 227	2 x 175	2 x 149	2 x 135	
D	21.45	18.75	17.00	14.94	13.78	13.10	
N	623	713	785	895	970	1020	

A.6 ACOUSTICS

Tables A-13 to A-22 inclusive illustrate, in a very abbreviated form, various computer print-outs of three computer programs: B5BA, Generalized Engine Cycle Procedure; SNAP, Douglas Source Noise Analysis Procedure; and AIFA, Aircraft Contour/Community Noise Impact Evaluation Program.

Table A-13 contains a sample computer print-out of the B5BA computer program used in the parametric aircraft studies. The data shown are for the 50 passenger, 4500 foot (1371.6 m) field length, 2 x 250 nautical mile (463 km) stage length, nominal flap, fixed-pitch turbofan aircraft.

Table A-14 contains a sample computer print-out of the Douglas SNAP computer program used for estimating the flyover noise levels of the final design basepoint aircraft. The data shown are for the approach case of the 50 passenger, 850 nautical mile (1574.2 km) range, advanced flap, fixed-pitch turbofan aircraft. The hardwall treatment lines indicate the noise levels without any acoustic treatment. The minimum treatment lines indicate the noise levels obtained employing the cowl wall acoustic treatment shown in Figure 8-5, Volume II. The maximum treatment lines indicate the noise levels obtained when the engine components are treated to the jet/core noise floor. The effect of non-propulsive noise is not included in estimated levels.

Tables A-15 through A-22 contain a sample computer print-out of the AIFA Computer program for the final design basepoint aircraft, and the typical operational takeoff and landing procedure. Chicago Midway Airport was used for the noise impact analysis.

TABLE A-13

MEDIUM DENSITY AIR TRANSPORTATION (TURBOFAN)

ACOUSTICS ANALYSIS

AIRCRAFT TAKEOFF GROSS WEIGHT = 43920

ENGINE BYPASS RATIO = 6.0

ENGINE TREATMENT CONFIGURATION = HARDWALL

NUMBER OF PASSENGERS = 50

STAGE LENGTH = 250

FIELD LENGTH = 4500

ENGINE SCALING FACTOR = 0.20

NUMBER OF ENGINES = 2

WING AREA (SW) = 497

DESIGN THRUST (FNDES) = 7980

	TAKEOFF	APPROACH	SIDELINE
FAR PART 36 REQUIREMENTS (-10 dB)	83.0	92.0	92.0
ALTITUDE (FEET)	2970	370	1672 (SLANT RANGE)
THRUST (PERCENT)	0.70	0.40	1.00
AIRPLANE VELOCITY (KNOTS TAS)	146.0	134.0	146.0
FAR PART 36 ESTIMATED EPNL	78.2	98.3	87.1

TABLE A-14

MEDIUM DENSITY TASK II BASEPOINT, MIXED FLOW, (W/APPROACH DCF)

DESIGN CASE 1. MEDIUM DENSITY BASEPOINT MOD D3214-50.4, APPROACH (2 ENG. 370 ALT. FN 2283 LBS)

ENGINE THRUST = 2283. ENGINE RPM = 5397.60

TREATMENT	DISTANCE	FAN INLET	FAN EXHAUST	TURBINE	JET	CORE	AFT PNL	INLET PNL	D.C.	EPNL
Hardwall	200.	110.13	108.70	102.11	70.89	94.99	110.27	110.28	-8.00	102.28
Minimum	200.	104.01	99.90	99.47	70.89	94.99	103.97	104.25	-8.00	96.25
Maximum	200.	100.54	95.77	96.18	70.89	94.99	100.97	100.96	-8.00	92.97
Hardwall	370.	103.34	101.91	94.91	64.86	88.96	103.45	103.50	-5.50	98.00
Minimum	370.	97.22	93.11	92.27	64.86	88.96	97.15	97.49	-5.50	91.99
Maximum	370.	93.75	88.98	88.98	64.86	88.96	94.26	94.24	-5.50	88.76
Hardwall	1000.	89.28	87.84	79.84	54.18	78.29	89.44	89.48	-1.30	88.18
Minimum	1000.	83.16	79.04	77.20	54.18	78.29	83.55	83.64	-1.30	82.34
Maximum	1000.	79.68	74.91	73.90	54.18	78.29	81.30	80.63	-1.30	80.00
Hardwall	4000.	63.27	61.84	48.16	37.38	61.49	65.15	64.18	3.20	68.35
Minimum	4000.	57.15	53.04	45.52	37.38	61.49	62.34	59.88	3.20	65.54
Maximum	4000.	53.68	48.91	42.23	37.38	61.49	61.87	58.34	3.20	65.07
Hardwall	10000.	42.00	40.57	17.90	25.05	49.16	49.83	46.27	4.40	54.23
Minimum	10000.	35.88	31.77	15.26	25.05	49.16	49.28	44.78	4.40	53.68
Maximum	10000.	32.41	27.64	11.97	25.05	49.16	49.22	44.46	4.40	53.62

TABLE A-15

ENGINE NOISE DATA, EPNDB

		THRUST				
		2000.0	3000.0	4000.0	5000.0	6000.0
SLANT RANGE	500.	88.0	91.5	94.2	96.5	98.5
	1000.	80.5	84.5	88.0	90.5	92.2
	2000.	71.5	76.5	80.5	83.0	85.5
	3000.	65.7	71.2	75.3	78.2	80.6
	4000.	61.3	67.3	71.5	74.5	77.0
REF VEL		135.0	135.0	165.0	165.0	165.0

TABLE A- 16

TAKEOFF PARAMETERS

DISTANCE FBR ALONG FL PATH	DIST. FBR ALONG RUNWAY CENTERLINE	ALTITUDE	DISTANCE FROM RUNWAY CENTERLINE	AIRCRAFT VELOCITY	THRUST	FLAP ANGLE	EXHAUST VELOCITY	EXHAUST TEMP.
0.0	0.0	0.0	0.0	0.0	8039.0	0.0	0.0	0.0
2744.2	2744.2	0.0	0.0	127.0	6289.0	0.0	0.0	0.0
3435.2	3435.2	35.0	0.0	133.3	6218.5	0.0	0.0	0.0
6066.6	6066.6	362.9	0.0	142.3	6149.4	0.0	0.0	0.0
8361.8	8361.8	592.0	0.0	157.1	6007.0	0.0	0.0	0.0
10921.1	10921.1	950.8	0.0	161.9	5988.3	0.0	0.0	0.0
13879.9	13879.9	1485.3	0.0	162.0	6040.0	0.0	0.0	0.0
14202.1	14202.1	1542.1	0.0	161.5	4086.5	0.0	0.0	0.0
16626.9	16626.9	1796.1	0.0	160.5	4116.1	0.0	0.0	0.0
19054.7	19054.7	2015.2	0.0	160.5	4131.7	0.0	0.0	0.0
21535.8	21535.8	2236.8	0.0	160.5	4147.5	0.0	0.0	0.0
24773.8	24773.8	2522.2	0.0	160.5	4168.4	0.0	0.0	0.0

TABLE A-17

APPROACH PARAMETERS

DISTANCE TT ALONG FL PATH	DISTANCE TT ALONG RUNWAY CENTERLINE	ALTITUDE	DISTANCE FROM RUNWAY CENTERLINE	AIRCRAFT VELOCITY	THRUST	FLAP ANGLE	EXHAUST VELOCITY	EXHAUST TEMP.
0.0	0.0	50.0	0.0	123.5	1902.0	0.0	0.0	0.0
693.0	693.0	100.0	0.0	123.7	1907.0	0.0	0.0	0.0
2083.0	2083.0	200.0	0.0	123.9	1916.0	0.0	0.0	0.0
3475.0	3475.0	300.0	0.0	124.0	1925.0	0.0	0.0	0.0
4868.0	4868.0	400.0	0.0	124.2	1935.0	0.0	0.0	0.0
6263.0	6263.0	500.0	0.0	124.4	1944.0	0.0	0.0	0.0
7660.0	7660.0	600.0	0.0	124.6	1953.0	0.0	0.0	0.0
9060.0	9060.0	700.0	0.0	124.8	1963.0	0.0	0.0	0.0
10462.0	10462.0	800.0	0.0	125.0	1973.0	0.0	0.0	0.0
11866.0	11866.0	900.0	0.0	125.1	1982.0	0.0	0.0	0.0
13271.0	13271.0	1000.0	0.0	125.3	1992.0	0.0	0.0	0.0
16080.0	16080.0	1200.0	0.0	125.3	2011.0	0.0	0.0	0.0

TABLE A-18

EPNL GRID - TAKEOFF

(DISTANCE FROM FLIGHT PATH CENTERLINE, FT)

DISTANCE F.B.R. TYPE NOISE	0 5000	500 5500	1000 6000	1500 6500	2000 7000	2500 7600	3000 8000
0. Engine Noise	114.5	101.3	92.2	87.7	84.6	81.3	78.6
1000. Engine Noise	110.0	97.2	88.3	83.4	79.8		
4500. Engine Noise	103.8	97.0	88.9	83.7	80.0		
7000. Engine Noise	99.6	95.8	90.2	85.1	81.2	77.9	
9500 Engine Noise	95.6	93.4	89.6	85.2	81.2	77.8	
12500 Engine Noise	90.4	89.5	87.6	85.3	82.9	79.6	
14000 Engine Noise	88.6	88.0	86.5	84.5	82.3	80.3	77.5
17500 Engine Noise	81.7	81.2	80.0	78.3			
19500 Engine Noise	80.7	80.2	79.1				
21000							

TABLE A- 19

EPNL GRID - APPROACH

(DISTANCE FROM FLIGHT PATH CENTERLINE, FT)

DISTANCE T.T. TYPE NOISE	0 5000	500 5500	1000 6000	1500 6500
0. Engine Noise	94.8	83.9	73.7	
1000. Engine Noise	93.8	84.8	75.0	
2000. Engine Noise	92.7	85.3	75.7	
4500. Engine Noise	90.0	85.0	76.8	
7000. Engine Noise	87.1	83.4	77.9	
9500 Engine Noise	84.1	81.8	77.2	
12000 Engine Noise	81.8	80.1	76.3	
14500 Engine Noise	79.8	78.4		

TABLE A-20

80.0 EPNdB NOISE CONTOUR POINTS - TAKEOFF

(ALL DISTANCE IN FEET)

DISTANCE FBR ALONG FL PATH	DISTANCE FROM FL PATH CENTERLINE	COORDINATE POINTS	COORDINATE POINTS
0.	2743.	(0., 2743.)	(0., -2743.)
1000.	1978.	(500., 2321.)	(500., -2321.)
3000.	1667.	(3000., 1667.)	(3000., -1667.)
5500.	2090.	(5500., 2090.)	(5500., -2090.)
8500.	2161.	(8500., 2161.)	(8500., -2161.)
12000.	2405.	(12000., 2405.)	(12000., -2405.)
16000.	1181.	(16000., 1181.)	(16000., -1181.)
20767.	0.	(20767., 0.)	(20767., 0.)

AREA WITHIN TAKEOFF CONTOUR = 2.61 SQUARE MILES
6.76 SQUARE KILOMETERS

TABLE A-21

80.0 EPNDB NOISE CONTOUR POINTS - APPROACH

(ALL DISTANCE IN FEET)

DISTANCE TT ALONG FL PATH	DISTANCE FROM FL PATH CENTERLINE	COORDINATE POINTS	COORDINATE POINTS
0.	2743.	(0., 2743.)	(0., -2743.)
500.	2648.	(500., 2648.)	(500., -2648.)
1500.	1170.	(1500., 1170.)	(1500., -1170.)
3000.	799.	(3000., 799.)	(3000., -799.)
5000.	807.	(5000., 807.)	(5000., -807.)
7500.	795.	(7500., 795.)	(7500., -795.)
10000.	664.	(10000., 664.)	(10000., -664.)
12000.	514.	(12000., 514.)	(12000., -514.)
14221.	0.	(14221., 0.)	(14221., 0.)

AREA WITHIN APPROACH CONTOUR = 0.86 SQUARE MILES
2.23 SQUARE KILOMETERS

TOTAL AREA WITHIN CONTOUR = 3.47 SQUARE MILES
8.99 SQUARE KILOMETERS

TABLE A-22

COMMUNITY NOISE IMPACT

AIRPORT -- MDW-MIDWAY (CHICAGO)

RUNWAY -- 22L
RUNWAY COORDINATES -- (2050., 1800) FEET RELATIVE TO AIRPORT REFERENCE POINT
RUNWAY ANGLE -- 228.0 DEGREES MEASURED COUNTERCLOCKWISE FROM EAST-WEST LINE

COORDS REL TO AIRPORT REF PT.	COORDS REL TO RUNWAY BR PT.	POPULATION	EPNL	ANNOYANCE FACTOR	NOISE IMPACT
(-11500., -13500.)	(20437., 168.)	66.4	80.0	0.001	0.05
(- 8000., -11000.)	(16237., 1096.)	0.0	80.2	0.004	0.0
(- 8000., - 6000.)	(12521., -2249.)	0.0	81.3	0.025	0.0
(- 5000., - 9500.)	(13115., 2322.)	0.0	81.0	0.020	0.0
(- 5000., - 3000.)	(8284., -2027.)	137.5	81.0	0.019	2.64
(- 2000., - 5500.)	(8135., 1875.)	0.0	82.2	0.043	0.0
(- 2000., 0.)	(4048., -1805.)	0.0	80.9	0.018	0.0
(0., - 3500.)	(5310., 2028.)	125.4	80.3	0.007	0.86
(0., 0.)	(2709., - 319.)	0.0	99.0	0.380	0.0
(0., 3000.)	(480., -2326.)	117.3	80.1	0.001	0.15
(500., - 2500.)	(4233., 1725.)	0.0	81.7	0.034	0.0
(500., 3000.)	(145., -1955.)	44.7	84.2	0.083	3.72
(2000., - 500.)	(1743., 1502.)	0.0	81.6	0.032	0.0
(2000., 2500.)	(- 487., - 506.)	0.0	84.4	0.087	0.0
(5000., 4000.)	(-3609., 720.)	83.0	81.5	0.031	2.56
(5000., 6000.)	(-5095., - 618.)	127.1	82.9	0.058	7.33
(8000., 7500.)	(-6217., 608.)	127.1	81.5	0.031	3.92
(8000., 9000.)	(-9332., - 396.)	22.0	82.4	0.047	1.04
(11000., 12000.)	(-13569., - 174.)	63.4	80.0	0.000	0.02

TOTAL POPULATION AFFECTED = 11613.1
TOTAL NOISE IMPACT = 1485.16

APPENDIX B - OPERATIONS

B.1 CITY PAIRS TRAFFIC DENSITY

Table B-1 contains the CAB data on origin and destination air travelers for 1972. The data is organized by range increments of 100 miles and traffic density per year. The density classes are equivalent to 20 to 49 travelers per day per route for the first class only. The remaining class increments are 50 passengers per day per route to a maximum limit of 500 per day. City pairs are coded with a three-letter designation. This data provided the background for the preliminary size screening in Section 12.1.

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 0- 99 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
AHN	ATL	67	16,550	1,108,850
ATL	CSG	83	14,630	1,214,290
ATL	GAD	98	14,560	1,426,880
AVL	CLT	92	7,830	720,360
BAL	SBY	85	12,260	1,042,100
BDL	BOS	91	10,390	945,490
BDL	PVD	66	7,970	526,020
BPT	IAH	78	17,730	1,382,940
BUF	ROC	55	11,890	653,950
CHI	JVL	83	10,910	905,530
CLE	MFD	59	12,210	720,390
CVG	DAY	63	9,990	629,370
CYS	DEN	95	17,450	1,675,200
DAL	TYR	78	15,830	1,234,740
DUJ	PIT	84	9,710	815,640
HNL	LNY	73	14,870	1,085,510
JST	PIT	75	11,700	877,500
LAW	OKC	72	10,180	743,140
LAX	PMD	48	9,180	440,640
LAX	WJF	48	9,180	440,640
LEX	SDF	62	11,640	733,320
LNK	OMA	55	10,860	597,300
MDT	WAS	93	10,510	977,430
MEM	MKL	71	7,380	523,980
MEM	TUP	88	11,620	1,022,560
MGW	PIT	61	13,240	807,640
MKE	MKG	85	14,220	1,222,920
MKE	MSN	74	11,150	825,100
MKE	OSH	87	7,890	686,430
MKK	OGG	46	9,380	440,860
MSP	RST	76	13,310	1,011,560
NYC	PHL	84	8,280	695,520
OWB	SDF	83	11,290	948,360
PHL	TTN	31	12,180	377,580
PIT	YNG	57	13,670	779,190
STL	UIN	94	12,140	1,141,160
TOTALS		36	423,780	31,380,090

TABLE B.1

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CA8DB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 0- 99 TRAFFIC DENSITY: 18250- 36499

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ACT	DAL	88	32,190		2,961,480
AIY	PHL	47	27,750		1,304,250
BAL	WAS	36	19,320		714,840
BTR	MSY	65	22,200		1,443,000
CAK	PIT	70	22,600		1,582,000
CKB	PIT	83	20,660		1,714,780
COU	STL	99	23,140		2,290,860
CVG	SDF	83	28,150		2,336,450
DTT	FNT	53	29,670		1,572,510
LAX	PSP	97	25,530		2,476,410
MKC	TOP	56	18,570		1,039,920
MRY	SFO	86	32,480		2,825,760
TOTALS		12	302,260		22,262,260

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 0- 99 TRAFFIC DENSITY: 36500- 54749

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ANB	ATL	82	45,620	3,740,840
BET	CHI	71	46,630	3,310,730
CHI	SBN	76	47,600	3,617,600
CHO	WAS	84	37,970	3,189,480
GPT	MSY	76	52,870	4,018,120
HNL	MKK	54	46,710	2,522,340
SFO	SMF	78	47,110	3,674,580
SPI	STL	84	39,260	3,297,840
TOTALS		8	363,770	27,371,530

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 0- 99 TRAFFIC DENSITY: 54750- 72999

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
COS	DEN	67	58,530	3,921,510
DTT	LAN	79	57,490	4,541,710
DTT	MBS	96	64,440	6,186,240
KOA	OGG	90	65,100	5,859,000
TOTALS		4	245,560	20,508,460

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 0- 99 TRAFFIC DENSITY: 91250- 109499

CITY-PAIRS	DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
CLE DTT	94	108,820	10,229,080
RIC WAS	96	93,690	8,994,240
TOTALS 2		202,510	19,223,320

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 100- 199 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ABQ	FMN	148	11,560	1,710,880
ABQ	ROW	163	13,970	2,277,110
ALB	BTV	124	8,520	1,056,480
ALB	ISP	139	15,740	2,203,600
ALB	SYR	119	17,250	2,052,750
ALO	MSP	166	10,970	1,821,020
ALS	DEN	169	9,400	1,588,600
AOO	PIT	102	10,970	1,118,940
APN	DTT	192	11,530	2,213,760
ATL	BHM	134	10,750	1,440,500
ATL	CAE	192	16,940	3,252,480
ATL	MGR	180	11,890	2,140,200
ATY	MSP	193	8,400	1,621,200
BOR	BOS	137	12,340	1,690,580
BFD	PIT	123	11,910	1,464,930
BFF	DEN	159	14,460	2,313,600
BFI	PDX	132	16,420	2,167,440
BJI	MSP	199	17,000	3,383,000
BMG	CHI	198	9,600	1,900,800
BOI	LWS	198	14,470	2,865,060
BOI	PIH	189	7,450	1,408,050
BRD	MSP	113	14,930	1,687,090
BRL	STL	146	11,040	1,611,840
BTR	MLU	146	9,310	1,359,260
BUF	CLE	186	12,400	2,306,400
CGI	STL	113	14,390	1,640,460
CHI	CWI	132	9,430	1,244,760
CHI	DNV	116	14,210	1,648,360
CHI	GBG	153	11,440	1,750,320
CHI	HUF	168	16,760	2,832,440
CHI	JXN	172	10,270	1,766,440
CHI	LAF	110	13,290	1,461,900
CHI	LAN	174	14,470	2,517,780
CHI	MIE	168	11,860	1,992,480
CHI	MTW	177	11,970	2,118,690
CIC	SFO	143	10,190	1,457,170
CKB	WAS	163	15,000	2,445,000
CLT	ILM	185	7,970	1,474,450
CLT	ROU	130	16,900	2,197,000
CMH	IND	182	11,720	2,133,040
COU	MKC	129	12,070	1,605,310
CRP	SAT	134	7,980	1,077,300

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 100- 199 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
CRW	MGW	125	8,730	1,099,980
CRW	PIT	163	8,410	1,370,830
CWA	MSP	182	13,910	2,531,620
DAL	GGG	115	14,550	1,673,250
DAN	WAS	197	7,390	1,455,830
DEC	STL	109	7,700	839,300
DEN	GUC	140	10,140	1,419,600
DEN	LAR	114	8,910	1,024,650
DEN	MTJ	184	9,350	1,720,400
DSM	MKC	174	10,870	1,891,380
DTT	MKG	166	15,460	2,566,360
DTT	YNG	149	9,540	1,421,460
ELM	PHL	182	8,500	1,547,000
ESF	MSY	155	14,890	2,307,950
EUG	PDX	106	9,430	999,580
FLG	PHX	119	13,640	1,623,160
FSD	MSP	197	13,370	2,633,890
FSD	OMA	162	7,760	1,264,880
GCN	LAS	169	8,820	1,490,580
GRB	MKE	107	12,960	1,386,720
GRI	OMA	128	9,490	1,214,720
GRR	MKE	120	17,130	2,055,600
GTR	MEM	137	15,990	2,190,630
HPN	SYR	187	9,460	1,769,020
HVN	PHL	151	9,580	1,446,580
IAH	LCH	126	10,220	1,287,720
IAH	POE	152	8,390	1,275,280
IAH	SAT	191	11,180	2,146,560
IAH	VCT	117	7,370	862,580
IND	SDF	111	11,100	1,232,100
IPL	LAX	169	14,880	2,514,720
IPT	NYC	158	11,560	1,826,480
IPT	PHL	133	10,580	1,407,140
JAN	MEM	189	16,130	3,048,570
JHW	PIT	125	7,700	962,500
LAN	MKE	168	11,130	1,869,840
LAS	PSP	173	8,440	1,460,120
LCH	SAT	148	11,610	1,718,280
LSE	MSP	120	13,210	1,585,200
MEM	MSL	136	7,850	1,067,600
MGW	WAS	152	10,520	1,599,040
MKC	SLN	166	11,180	1,855,880

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 100- 199 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
MSY	POE	189	13,180	2,504,200
ORF	RDU	159	7,690	1,230,400
OTH	PDX	170	8,550	1,462,050
PDX	SEA	132	16,420	2,167,440
PHX	YUM	160	13,300	2,128,000
PIT	PSB	120	8,740	1,048,800
SBY	WAS	101	12,940	1,319,880
SLC	TWF	175	17,870	3,127,250
TRI	TYS	100	9,410	941,000
TTN	WAS	161	9,090	1,463,490
TOTALS		94	1,095,300	166,075,560

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 100- 199 TRAFFIC DENSITY: 18250- 36499

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE AS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ALB	ROC	198	27,730	5,490,540
ATL	GSP	154	27,660	4,259,640
ATL	MSL	197	24,150	4,781,700
ATL	TCL	186	29,780	5,539,080
AVP	NYC	100	30,540	3,054,000
BGL	SYR	192	25,530	4,901,760
BFT	PSC	173	24,600	4,255,800
BFT	YKM	105	18,790	1,972,950
BMI	CHI	114	18,970	2,162,580
BNA	TYS	152	28,200	4,286,400
BOS	HPN	165	26,500	4,399,000
BRL	CHI	190	29,480	5,601,200
BUF	SYR	134	26,540	3,556,360
CAK	DTT	132	19,820	2,616,240
CHI	DBQ	155	33,250	5,153,750
CHI	MKG	119	25,620	3,048,780
CHI	MLI	145	30,590	4,466,140
CLE	CMH	117	26,510	3,101,670
CLE	DAY	167	32,230	5,414,640
CLE	PIT	104	26,180	2,748,900
CMH	DTT	161	24,600	3,960,600
CMI	STL	143	19,000	2,717,000
CRP	IAH	193	28,680	5,563,920
CRW	CVG	173	29,290	5,067,170
CVG	HTS	123	36,380	4,474,740
DAL	GKC	181	19,930	3,613,050
DAL	TPL	120	25,670	3,208,750
DAL	TXK	157	33,270	5,223,390
DAY	DTT	175	21,450	3,753,750
DEN	PUB	104	26,730	2,779,920
DTT	PIT	198	21,090	4,175,820
DTT	SBN	167	20,120	3,360,040
EVV	IND	134	26,870	3,627,450
GLH	MEM	123	20,300	2,496,900
HIB	MSP	174	22,500	3,915,000
HOT	MEM	182	24,630	4,482,660
HSV	MEM	164	27,190	5,030,150
HTS	PIT	192	27,990	5,374,080
IPT	PIT	181	22,590	4,088,790
JLN	MKC	136	20,570	2,797,520
LAX	SMX	145	22,740	3,320,040
LIT	MEM	130	30,270	3,935,100

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 100- 199 TRAFFIC DENSITY: 18250- 36499

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
MHK	MKC	112	35,360	3,960,320
MKC	ONA	165	34,390	5,674,350
MKC	SGF	145	31,370	4,580,020
MLI	STL	186	29,630	5,629,700
MOB	MSY	130	31,230	4,059,900
MWA	STL	100	20,290	2,049,290
PAH	SDF	183	19,680	3,601,440
PAH	STL	145	21,950	3,182,750
PDX	PSC	174	26,560	4,621,440
PDX	YKM	120	22,360	2,683,200
PIT	PKB	102	28,470	2,903,940
PSC	SEA	173	24,600	4,255,800
PUK	SDF	183	19,680	3,601,440
PUK	STL	145	21,950	3,182,750
RDD	SFO	189	24,990	4,723,110
RIC	ROA	146	20,310	2,965,260
SEA	YKM	105	18,790	1,972,950
SHD	WAS	100	26,150	2,615,000
STL	TBN	119	22,050	2,623,950
TOTALS		61	1,563,940	236,663,580

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 100- 199 TRAFFIC DENSITY: 36500- 54749

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ALB	BOS	145	38,560		5,591,200
ALS	IAH	147	37,350		5,490,450
AZO	DTT	122	51,090		6,232,980
BUF	PIT	186	36,970		6,876,420
CHI	DEC	152	46,430		7,103,790
DAL	LAW	149	50,170		7,926,860
ELM	NYC	180	49,810		9,015,610
ERI	PIT	109	47,860		5,216,740
ITH	NYC	176	47,760		8,453,520
ITO	OGG	121	50,250		6,080,250
LAS	ONT	194	38,570		7,482,580
LCH	MSY	178	39,460		7,023,880
LNK	MKC	165	38,440		6,342,600
CYH	WAS	152	39,200		5,958,400
MCO	MIA	196	42,800		8,388,800
ORF	WAS	149	37,140		5,533,860
PHX	TUS	109	39,330		4,286,970
PIA	STL	137	42,710		5,851,270
SGF	STL	195	53,680		10,467,600
TOTALS		19	827,580		129,323,780

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 100- 199 TRAFFIC DENSITY: 54750- 72999

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ABI	DAL	168	56,920	10,359,440
ATL	DHN	171	72,310	12,365,010
BDL	NYC	106	66,800	7,147,600
BGM	NYC	145	66,760	9,680,200
BOS	ISP	153	56,230	8,659,420
CMH	PIT	143	57,360	8,259,840
DTT	GRR	126	67,370	8,488,620
RNL	MOE	171	56,730	9,700,830
LFT	MSY	105	65,280	6,854,400
MDT	NYC	154	62,550	9,632,700
NYC	UCA	181	67,280	12,177,680
TOTALS		11	695,590	103,325,740

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 100- 199 TRAFFIC DENSITY: 73000- 91249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ABY	ATL	145	86,810		12,674,260
AIL	AVL	164	90,940		14,914,160
BDL	PHL	190	73,950		14,050,500
CHI	GRR	134	88,520		11,861,680
CHI	OSH	160	77,830		12,452,800
DAL	SPS	124	74,950		10,118,250
DLH	MSP	144	82,190		11,835,360
RDA	WAS	184	88,440		16,272,960
TOTALS		8	663,630		104,179,970

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 100- 199 TRAFFIC DENSITY: 91250- 109499

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
AZO	CHI	116	107,550		12,475,800
CHI	CMI	130	100,490		13,063,700
CHI	IND	167	93,040		15,537,680
CHI	SPI	172	107,710		18,526,120
NYC	PVD	149	100,560		15,084,000
TOTALS		5	509,350		74,687,300

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.V6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 100- 199 TRAFFIC DENSITY: 109500- 127749

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ATL	HSV	151	124,850	18,852,350
AUS	DAL	182	124,550	23,290,850
CHI	GRB	181	110,600	20,018,600
MDT	PIT	182	121,110	22,042,020
NYC	SYR	197	127,080	25,034,760
TOTALS	5		608,190	109,238,580

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 100- 199 TRAFFIC DENSITY: 146000- 164249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
BAL	NYC	179	153,030	27,392,370
CHI	PIA	131	156,780	20,538,180
TOTALS	2		309,810	47,930,550

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 100- 199 TRAFFIC DENSITY: 164250- 182499

CITY-PAIRS	DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
CHI MSN	118	171,640	20,253,520
PHL WAS	133	177,510	23,608,830
TOTALS 2		349,150	43,862,350

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE:CABDB4.Y6872.SYNC PERIOD:1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 200- 299 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ABR	MSP	257	17,780		4,569,460
ALB	BAL	288	17,380		5,005,440
ALO	MKC	263	9,580		2,519,540
ART	NYC	248	9,730		2,413,040
ATL	HRY	225	16,850		3,791,250
ATL	INT	294	18,120		5,327,280
AVP	BOS	253	16,170		4,107,180
BGR	WAS	269	9,360		2,517,840
BFD	NYC	253	11,730		2,967,690
BFI	EUG	237	8,550		2,026,350
BFI	LWS	262	10,470		2,743,140
BGM	BOS	255	15,470		3,944,850
BGM	PIT	251	8,570		2,151,070
BLF	CVG	224	8,700		1,948,800
BLF	WAS	242	10,600		2,565,200
BNA	TRI	239	17,670		4,240,800
BOI	GEG	287	10,230		2,936,010
BOI	IDA	209	9,430		1,970,870
BOI	SLC	290	15,660		4,557,060
BPT	MSY	226	17,630		3,984,380
BUF	CMH	296	11,420		3,380,320
BUF	HPN	289	10,530		3,043,170
BUF	PHL	282	9,550		2,693,100
CAK	IND	268	14,160		3,794,880
CHA	MEM	270	16,770		4,544,670
CHI	DTT	238	15,650		3,724,700
CHI	ESC	267	12,830		3,425,610
CHI	IMT	272	10,740		2,921,280
CHI	MNM	224	9,090		2,036,160
CID	STL	228	12,690		2,893,320
CLE	CVG	226	17,570		3,970,820
CLE	ELM	256	15,270		3,909,120
CLE	GRR	216	7,740		1,671,840
CLE	MDT	274	11,050		3,027,700
CLT	ORF	289	18,010		5,204,890
CLT	RIC	256	15,570		3,985,920
CRW	WAS	238	10,840		2,579,920
CVG	PIT	256	13,330		3,412,480
DAL	HOT	232	16,870		3,913,840
DAL	LCH	273	11,530		3,147,690
DAL	PUE	236	11,800		2,784,800
DAY	MKE	285	16,080		4,582,800

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 200- 299 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
DEN	FMN	277	11,200	3,102,400
DEN	LBF	239	10,980	2,635,200
DEN	RIW	293	8,680	2,551,920
DTT	GRB	291	11,270	3,279,570
DTT	PLN	239	13,260	3,169,140
DTT	SSM	294	9,280	2,728,320
ELM	PIT	208	15,820	3,290,560
ELM	WAS	226	17,410	3,934,660
ERI	MDT	218	12,800	2,790,400
ERI	WAS	268	15,160	4,062,880
EUG	SEA	237	8,550	2,026,350
FAT	LAS	258	10,130	2,623,670
FSM	MEM	249	16,290	4,056,210
FYV	MEM	245	8,370	2,050,650
FYV	STL	282	13,580	3,829,560
GEG	PDX	278	12,040	3,347,120
GSO	ORF	215	9,220	1,991,520
GSO	WAS	243	8,390	2,047,160
HPN	ROC	248	14,750	3,658,000
IND	MKE	237	15,960	3,787,260
INL	MSP	253	11,860	3,012,440
ITH	WAS	251	12,960	3,252,960
JAC	SLC	204	13,540	2,775,700
JHW	NYC	291	12,890	3,750,990
LAX	YUM	225	9,920	2,241,920
LBF	OMA	250	8,280	2,070,000
LEX	PIT	289	15,000	4,335,000
LMT	PDX	241	7,730	1,862,930
LNS	PIT	209	8,410	1,757,690
LWS	SEA	262	10,470	2,743,140
MEM	MGM	280	9,100	2,557,100
MEM	MLU	212	14,500	3,074,000
MEM	TXK	255	8,450	2,154,750
MFR	PDX	222	9,300	2,064,600
MKC	MLI	268	13,930	3,747,170
MSP	SUX	233	8,960	2,087,680
MSP	TVF	261	14,380	3,753,180
ORF	ROA	210	14,560	3,072,160
PIT	RDG	225	11,720	2,637,000
PIT	ROC	224	16,170	3,622,080
RIC	TRI	290	7,310	2,119,900
ROC	WAS	292	17,380	5,074,960

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE:CABDB4.Y6872.SYNC PERIOD:1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 200- 299 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	AS	TRAFFIC-DISTANCE PRODUCT PASSENGER
RWI	WAS	211	7,630		1,609,930
SBA	SFO	271	10,350		2,815,200
SDF	TRI	218	15,960		3,479,280
TOTALS	87		1,082,690		273,570,590

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABOB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 200- 299 TRAFFIC DENSITY: 18250- 36499

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ABE	BOS	258	33,500	8,643,000
ABE	PIT	252	32,310	8,142,120
ATL	FLO	273	21,530	5,877,690
ATL	GTR	241	23,960	5,774,360
ATL	MEI	266	21,470	5,732,490
ATL	VLD	208	23,230	4,831,840
BAL	BDL	283	36,050	10,202,150
BAL	CHW	271	23,610	6,421,920
BDL	ROC	267	29,140	7,780,380
BHM	MEM	211	29,910	6,340,920
BUF	WAS	290	32,240	9,349,600
CHI	CID	203	28,040	5,692,120
CHI	EAU	278	21,960	6,104,880
CHI	MCW	298	24,970	7,441,060
CHI	PLN	295	18,740	5,528,300
CHI	RHI	273	27,820	8,012,160
CHI	UIN	224	19,090	4,276,160
CHO	NYC	299	27,550	8,237,450
CID	MKC	244	19,120	4,665,280
CID	MSP	221	21,720	4,800,120
CLE	IND	265	23,530	6,258,980
CPR	DEN	231	25,810	5,987,920
CVG	DTT	238	28,420	6,763,960
CVG	ROA	282	20,410	5,755,620
CVG	TRI	216	23,160	5,002,560
DAL	FSM	215	27,510	5,914,650
DAL	FYV	259	20,110	5,208,490
DEN	DRO	238	21,850	5,200,300
DSM	MSP	232	29,300	6,797,600
DTT	TVC	207	31,300	6,479,100
GFK	MSP	284	30,180	8,571,120
GJT	SLC	216	19,380	4,186,080
GRB	MSP	252	23,650	5,959,800
HPN	WAS	240	36,470	8,752,800
HRL	IAH	285	31,330	8,960,360
HVN	WAS	282	28,330	8,017,390
IAH	LFT	201	28,750	5,778,750
INT	WAS	251	24,570	6,167,070
ISO	WAS	247	21,420	5,290,740
JLN	STL	251	29,350	7,366,850
LAS	LAX	226	29,290	6,648,830
MCO	TLH	225	30,030	6,756,750

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 200- 299 TRAFFIC DENSITY: 18250- 36499

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	AS	TRAFFIC-DISTANCE PRODUCT PASSENGER
MEM	STL	255	18,320		4,671,600
MKC	SYL	229	19,470		4,458,630
MKC	SUX	245	18,930		4,637,850
MLI	MSP	270	24,100		6,507,000
MLU	MSY	203	22,980		4,664,940
MSN	MSP	228	18,350		4,183,800
MSP	OMA	282	21,030		5,930,460
MSY	VPS	226	23,030		5,204,780
OAJ	WAS	289	35,410		10,233,490
PHF	PHL	205	31,130		6,381,650
PIT	SYR	279	35,880		10,010,520
PIT	TOL	201	18,510		3,720,510
RDU	WAS	224	19,690		4,430,250
TOTALS		55	1,406,940		350,715,220

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE:CABDB4.Y6872.SYNC PERIOD:1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 200- 299 TRAFFIC DENSITY: 36500- 54749

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ALB	BUF	251	48,340	12,133,340
ATL	PFN	247	53,100	13,115,700
AVP	PIT	243	44,990	10,932,570
BNA	MEM	200	47,840	9,568,000
BPT	DAL	251	42,760	10,732,760
BTR	IAH	253	36,800	9,347,200
CHI	CWA	205	51,450	10,547,250
CHI	LSE	225	46,130	10,379,250
CHI	RST	278	47,000	13,066,000
CHI	TVC	226	41,590	9,399,340
DAL	SJT	236	37,330	9,332,500
DAL	TUL	234	50,250	11,758,500
DAY	PIT	214	43,450	9,341,750
DSM	STL	260	37,550	9,763,000
EWN	WAS	263	38,040	10,042,560
IND	STL	229	54,320	12,439,280
LAS	SAN	258	37,700	9,726,600
MKE	MSP	297	49,340	14,653,980
NYC	WAS	215	39,860	8,569,900
TOTALS		19	847,840	204,849,480

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 200- 299 TRAFFIC DENSITY: 54750- 72999

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ACV	SFO	239	56,300	13,455,700
ALO	CHI	242	61,850	14,967,700
ATL	VPS	250	63,730	15,932,500
BAL	PIT	210	54,830	11,514,300
BUR	LAS	223	60,560	13,565,440
DAL	LIT	283	66,210	18,737,430
DEN	GJT	200	70,060	14,012,000
DTT	MKE	244	56,520	13,790,880
FAY	WAS	284	57,840	16,426,560
ISP	WAS	256	60,120	15,390,720
KOA	LIH	269	57,410	15,443,290
LAS	SNA	225	66,830	15,103,580
LAX	MRY	273	55,630	15,186,990
NYC	ORF	291	55,880	16,261,080
ORF	PHL	215	72,490	15,585,350
PHL	PVD	231	65,650	15,165,150
SYR	WAS	297	57,600	17,107,200
TOTALS		17	1,039,510	257,645,870

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 200- 299 TRAFFIC DENSITY: 73000- 91249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ATL	TRI	226	78,700	17,864,900
BFT	GEG	223	82,180	18,326,140
BOS	SYR	264	89,130	23,530,320
BTV	NYC	261	85,020	22,190,220
DAL	TAH	222	83,040	18,434,880
GEG	SEA	223	82,180	18,326,140
LIH	OGG	201	80,680	16,297,360
TOTALS		7	580,930	134,969,960

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 200- 299 TRAFFIC DENSITY: 91250- 109499

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ALB	PHL	208	93,270		19,400,160
LAS	PHX	255	94,870		24,191,850
TOTALS	2		188,140		43,592,010

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 200- 299 TRAFFIC DENSITY: 109500- 127749

CITY-PAIRS	DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
BUF NYC	289	112,200	32,425,800
CHI STL	256	127,040	32,522,240
NYC ROC	252	118,890	29,960,280
TOTALS 3		358,130	94,908,320

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 300- 399 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS	DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ABQ PHX	328	16,130	5,306,770
ATL BLF	310	7,380	2,295,180
ATL LYH	389	14,270	5,551,030
AUS LBB	335	9,440	3,162,400
BDL DAY	395	15,260	6,027,700
BGM CLE	304	14,070	4,277,280
BHM MSY	321	14,710	4,721,910
BNA GSO	377	11,650	4,392,050
BOI PDX	344	11,670	4,014,480
BOS ELM	302	13,200	3,986,400
BTR DAL	358	10,260	3,673,080
BUF DAY	353	13,450	4,747,850
BUF PVD	383	12,060	4,618,980
BZN SLC	346	8,200	2,845,400
CAK NYC	391	15,360	6,005,760
CAK PHL	341	10,590	3,611,190
CHI CMX	367	10,830	3,974,610
CHI COU	320	10,000	3,200,000
CHI HTS	367	7,990	2,932,330
CHI IWD	350	7,980	2,793,000
CHI SSM	360	9,020	3,247,200
CMH MDT	322	7,430	2,392,460
CRE WAS	360	15,160	5,457,600
CRP DAL	351	17,470	6,166,910
CVG RDU	390	7,390	2,882,100
DAL JLN	320	9,110	2,915,200
DAL LFT	327	16,740	5,473,980
DAL SGF	354	16,800	5,947,200
DAY MDT	393	7,440	2,923,920
DEN GRI	356	12,300	4,378,800
DEN SLN	393	8,300	3,261,900
DLH MKE	342	7,900	2,701,800
DTT ELM	322	9,460	3,046,120
DTT MDT	362	7,920	2,667,040
DTT MDT	363	11,010	3,996,630
DTT SYR	364	11,030	4,014,920
FSM STL	323	9,050	2,923,150
GPT MEM	325	11,340	3,685,500
GSO SDF	351	8,510	2,987,010
HSV MSY	379	13,290	5,036,910
IAH LIT	383	10,430	3,994,690
LAS SLC	368	13,340	4,909,120

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 300- 399 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
LAS	TUS	364	13,030	4,742,920
LAX	SFO	354	11,210	3,969,550
LMT	SFO	305	9,690	2,955,450
LYH	NYC	366	16,240	5,943,840
MCO	VPS	342	10,120	3,461,040
MEM	TUL	342	9,210	3,149,820
MEM	TYS	342	8,920	3,050,640
MFR	SFO	319	9,960	3,177,240
MKC	RST	348	7,350	2,557,800
MKE	SDF	348	10,190	3,546,120
PHL	PKB	339	9,400	3,186,600
ROA	SDF	321	13,700	4,397,700
UCA	WAS	309	12,810	3,958,290
TOTALS		55	616,770	215,454,570

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 300- 399 TRAFFIC DENSITY: 18250- 36499

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ABQ	DEN	339	23,100	7,830,900
ABQ	TUS	321	22,700	7,309,400
ALB	PIT	367	33,330	12,232,110
AMA	DEN	359	27,310	9,804,290
ATL	CAE	328	23,850	7,846,650
ATL	MOB	302	19,050	5,753,100
AVL	WAS	377	30,110	11,351,470
BAL	CMH	336	19,240	6,464,640
BAL	PVD	328	21,780	7,143,840
BIL	SLC	387	20,450	7,914,150
BNA	CLT	328	20,240	6,658,960
BUR	PHX	369	21,500	7,933,500
CHI	ERI	391	29,410	11,499,310
CHI	MDT	322	24,700	7,953,400
CLE	SYR	312	31,650	9,874,800
CMH	MKE	331	20,360	6,739,160
CVG	MKE	318	19,050	6,057,900
DAL	MAF	319	20,300	6,759,900
DAY	STL	339	21,540	7,302,060
DEN	RAP	309	33,520	10,391,200
ERI	PHL	304	33,480	10,177,920
FSD	MKC	327	18,840	6,160,680
GON	WAS	322	32,010	10,307,220
IAH	MSY	303	27,970	8,474,910
ILM	WAS	320	29,900	9,597,900
IND	PIT	324	21,380	6,948,500
ITO	LIH	317	22,490	7,151,820
LAS	SJC	391	34,400	13,450,400
MEM	MOB	317	18,380	5,844,840
ONT	PHX	322	30,730	9,895,060
ORF	PIT	330	23,150	7,639,500
TRI	WAS	328	26,710	8,760,880
TOTALS		32	802,630	269,230,370

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 300- 399 TRAFFIC DENSITY: 36500- 54749

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ATL	GPT	352	38,660		13,608,320
ATL	ILM	377	47,650		17,964,050
BDL	BUF	317	41,350		13,107,950
BOS	MDT	336	43,180		14,551,660
CHI	DSM	306	44,510		13,620,060
DEN	SLC	381	53,830		20,509,230
ERI	NYC	335	45,000		15,075,000
IAH	MFE	308	38,440		11,839,520
MKE	STL	317	44,890		14,230,130
NYC	ROA	399	52,750		21,047,250
PIT	SUF	335	38,830		13,008,050
TOTALS	11		489,090		168,561,220

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 300- 399 TRAFFIC DENSITY: 54750- 72999

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	R5	TRAFFIC-DISTANCE PRODUCT PASSENGER
ATL	ROA	357	69,880		24,947,160
BOS	BUF	396	64,340		25,478,640
CHI	MSP	344	58,900		20,261,600
TOTALS		3	193,120		70,687,400

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 300- 399 TRAFFIC DENSITY: 73000- 91249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
BOS	ROC	343	78,650	26,976,950
LAS	RNO	345	79,890	27,562,050
PHX	SNA	340	86,630	29,454,200
TOTALS	3		245,170	83,993,200

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 300- 399 TRAFFIC DENSITY: 91250- 109499

CITY-PAIRS	DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	TRAFFIC-DISTANCE PRODUCT RS PASSENGER
ALB WAS	321	102,930	33,040,530
ATL PAV	330	96,020	31,686,600
PVD WAS	364	107,460	39,115,440
TOTALS 3		306,410	103,842,570

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 300- 399 TRAFFIC DENSITY: 146000- 164249

CITY-PAIRS	DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER MILES
BAL BOS	370	154,660	57,224,200
BDL WAS	319	161,330	51,464,270
TOTALS 2		315,990	108,688,470

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE:CABDB4.Y6872.SYNC PERIOD:1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 400- 499 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ATL	CHO	456	7,500	3,427,500
BFI	BOI	400	11,310	4,524,000
BHM	MCO	475	16,910	8,032,250
BNA	RDU	443	10,500	4,651,500
BOI	SEA	400	11,310	4,524,000
BOS	WAS	406	10,930	4,437,580
BTV	WAS	439	12,980	5,698,220
BUF	CVG	410	9,590	3,931,900
BUF	IND	450	10,470	4,711,500
CAK	STL	497	13,500	6,709,500
CHI	JLN	485	9,870	4,786,950
CMH	NYC	472	10,270	4,847,440
CMH	PHL	412	17,680	7,284,160
CHW	NYC	438	18,230	7,984,740
DAL	LOI	402	11,160	4,486,320
DAL	ROW	447	13,410	6,195,420
DAY	PHL	483	13,430	6,486,690
DAY	SYR	475	7,680	3,648,000
DEN	FSD	496	8,140	4,037,440
DEN	JAC	402	15,140	6,086,280
DEN	LBB	454	13,420	6,092,680
DEN	MHK	441	7,530	3,320,730
DEN	OMA	484	14,580	7,056,720
GRR	MSP	408	9,450	3,855,600
HTS	NYC	486	9,060	4,403,160
HTS	PHL	413	7,560	3,122,280
IAH	LBB	466	8,100	3,774,600
ILM	NYC	495	15,420	7,632,900
INT	NYC	464	13,360	6,199,040
ISO	NYC	423	13,310	5,630,130
LAS	OAK	408	8,650	3,529,200
LAS	SFO	419	12,610	5,283,590
MCO	MGM	400	9,540	3,816,000
MEM	TRI	436	9,250	4,042,250
MKC	MKE	438	15,170	6,644,460
MSO	SLC	435	12,390	5,402,040
MSP	RAP	490	9,630	4,718,700
NYC	PKB	407	8,260	3,361,820
ORF	PVD	420	14,170	5,951,400
PHL	TOL	470	14,950	7,026,500
RIC	SDF	463	10,830	5,014,290
SNA	TUS	418	16,930	7,076,740

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 400- 499 TRAFFIC DENSITY: 7300- 18249

	CITY-PAIRS	DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	TRAFFIC-DISTANCE PRODUCT AS PASSENGER
TOTALS	42		494,180	219,446,220

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE:CABD84.Y6872.SYNC PERIOD:1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 400- 499 TRAFFIC DENSITY: 18250- 36499

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ALB	CLE	419	31,080	13,022,520
AYL	EWN	433	21,220	9,188,260
ATL	ISO	405	18,570	7,539,420
ATL	OAJ	407	34,780	14,155,460
BAL	SDF	495	18,450	9,132,750
BIL	DEN	456	23,260	10,629,820
BNA	PIT	461	18,500	8,547,000
CHI	MEM	485	21,830	10,587,550
CHI	SGF	438	24,210	10,603,980
CMH	STL	410	29,540	12,111,400
DAL	HRL	458	24,270	11,164,200
DAL	MFE	467	28,900	13,554,100
DAL	MKC	448	21,060	9,434,880
DEN	LNK	435	20,090	8,739,150
DEN	SUX	479	30,820	14,762,780
EUG	SFO	440	25,920	11,404,800
FAY	NYC	478	29,150	13,933,700
MOT	MSP	449	19,570	8,786,930
PIT	PVD	467	23,120	10,797,040
TOTALS		19	464,340	208,095,740

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 400- 499 TRAFFIC DENSITY: 36500- 54749

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
BAL	CVG	430	43,650	18,769,500
BOS	DAF	468	50,890	23,816,520
CHI	FSD	471	53,570	25,231,470
CHI	SUX	444	47,590	21,129,960
MIA	TLH	403	36,670	14,778,010
TOTALS	5		232,370	103,725,460

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 400- 499 TRAFFIC DENSITY: 54750- 72999

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
BDL	PIT	406	58,390	23,706,340
CHI	DLH	407	55,510	22,592,570
LAX	TUS	438	57,420	25,149,960
MSP	STL	448	70,380	31,530,240
TOTALS		4	241,700	102,979,110

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 400- 499 TRAFFIC DENSITY: 73000- 91249

CITY-PAIRS	DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
BOS PIT	496	75,830	37,611,680
CHI PIT	404	82,250	33,229,000
TOTALS 2		158,080	70,840,680

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 500- 599 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ACV	LAX	584	11,390	6,651,760
AMA	IAH	528	11,130	5,876,640
ATL	WAS	540	9,090	4,908,600
AVL	NYC	592	17,310	10,247,520
BDL	CMH	549	14,160	7,788,000
BNA	ORF	585	9,730	5,692,050
BNA	RIC	527	10,490	5,528,230
BUS	CLE	558	7,350	4,101,300
CHI	ELM	559	16,770	9,374,430
CHI	INL	537	9,290	4,988,730
CHI	IPT	563	7,790	4,385,770
CHI	ROA	521	15,430	8,039,030
CLT	MEM	512	15,030	7,695,360
CMI	WAS	595	14,990	8,919,050
CVG	MSP	596	9,780	5,828,880
DAL	OMA	585	12,070	7,060,950
DAY	MSP	575	13,630	7,837,250
DAY	NYC	543	13,550	7,357,650
DEN	OKC	500	7,640	3,820,000
GEG	SLC	547	16,350	8,943,450
GSO	MEM	569	10,220	5,825,400
LAX	SLC	583	7,330	4,273,390
LEX	NYC	598	14,460	8,647,080
LEX	PHL	526	7,340	3,860,840
MIA	VPS	500	8,540	4,270,000
ORF	SDF	531	11,230	5,963,130
PDX	SFO	540	8,180	4,417,200
SLC	SNA	587	17,790	10,442,730
TOTALS		28	328,060	182,744,420

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 500- 599 TRAFFIC DENSITY: 18250- 36499

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ABQ	DAL	580	35,870	21,306,780
ATL	ORF	516	28,860	14,902,080
BAL	IND	515	27,310	14,064,650
BOL	DTT	540	27,000	14,580,000
BTS	DEN	526	26,210	13,786,460
DEN	PHX	589	34,300	20,202,700
DTT	MSP	534	33,040	17,643,360
NYC	TRI	542	25,120	13,615,040
PIT	STL	553	31,680	17,550,720
TOTALS		9	269,410	147,651,790

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 500- 599 TRAFFIC DENSITY: 36500- 54749

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
DAL	STL	537	49,190		26,415,030
DEN	MKC	552	44,840		24,751,680
PHL	SDF	583	43,430		25,319,690
TOTALS	3		137,460		76,486,400

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 500- 599 TRAFFIC DENSITY: 54750= 72999

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
CHI	MDT	584	59,930	34,999,120
PHX	SLC	507	59,620	30,227,340
TOTALS	2		119,550	65,226,460

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE:CABDB4.Y6872.SYNC PERIOD:1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 600- 699 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ABE	CHI	647	10,850	7,019,950
ALO	DEN	677	15,460	10,481,880
BDL	CVG	661	8,070	5,334,270
BDL	DAY	619	15,990	9,897,810
BGM	CHI	607	15,130	9,183,910
BHM	MIA	661	12,300	8,130,300
BOS	DTT	623	10,170	6,335,910
CHI	GFK	623	18,110	11,282,530
CHI	JAN	672	8,710	5,853,120
CMH	MSP	627	8,490	5,323,230
CSG	WAS	617	15,850	9,779,450
DAL	MLI	682	7,380	5,047,920
DEN	GTF	624	10,090	6,296,160
DEN	MOT	612	16,500	10,114,500
DTT	PVD	606	10,840	6,569,040
NYC	SDF	653	7,780	5,080,340
PDX	SLC	630	14,900	9,387,000
PHX	RNO	600	11,310	6,797,310
PHX	SFO	657	7,660	5,032,620
PIA	WAS	673	10,100	6,797,300
SLC	TUS	600	10,150	6,090,000
TOTALS		21	245,840	155,834,550

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 600- 699 TRAFFIC DENSITY: 18250- 36499

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
BFI	KTN	676	25,320		17,116,320
BFI	SLC	690	25,490		17,613,590
BNA	PHL	681	33,420		22,759,020
KTN	SEA	676	25,320		17,116,320
MCO	MEM	681	19,070		12,986,670
MEM	PIT	651	20,560		13,405,120
PHX	SJC	627	27,130		17,010,510
SEA	SLC	691	25,490		17,613,590
TOTALS		8	201,800		135,621,140

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 600- 699 TRAFFIC DENSITY: 36500- 54749

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
ABQ	LAX	665	42,860		28,501,900
AVP	CHI	624	42,170		26,314,080
DEN	MSP	692	52,470		36,361,710
DEN	TUS	627	37,600		23,575,200
IND	NYC	654	38,590		25,237,860
TOTALS		5	213,690		139,990,750

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 600- 699 TRAFFIC DENSITY: 54750- 72999

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
DEN	LAS	616	72,780	44,832,480
TOTALS	1		72,780	44,832,480

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABD84.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 600- 699 TRAFFIC DENSITY: 73000- 91249

CITY-PAIRS	DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
DAL DEN	654	78,340	52,017,760
TOTALS 1		78,340	52,017,760

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 700- 799 TRAFFIC DENSITY: 7300- 18249

CITY-PAIRS		DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
AUS	DEN	769	7,970	6,128,930
BAL	STL	737	15,500	11,423,500
BDL	IND	727	17,510	12,747,280
BOS	CVG	752	7,700	5,790,400
CHI	MDT	793	15,310	12,140,830
CHI	NYC	721	12,280	8,853,880
CMI	NYC	755	14,820	11,189,100
DAL	GJT	783	8,200	6,519,000
DEN	SAT	794	15,070	11,965,580
EUG	LAX	752	14,330	10,776,160
EVV	NYC	748	12,110	9,058,280
GRB	NYC	765	7,300	5,584,500
MEM	ORF	781	10,500	8,211,000
MSP	ROC	783	7,860	6,154,380
VPS	WAS	783	13,480	10,554,840
TOTALS		15	179,940	137,097,660

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CA8084.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 700- 799 TRAFFIC DENSITY: 18250- 36499

CITY-PAIRS	DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGE	RS	TRAFFIC-DISTANCE PRODUCT PASSENGER
BUF MSP	734	25,730		18,885,820
TOTALS 1		25,730		18,885,820

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CA8DB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 700- 799 TRAFFIC DENSITY: 36500- 54749

CITY-PAIRS	DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
DEN STL	781	53,720	41,955,320
TOTALS 1		53,720	41,955,320

TRAFFIC RANGE AND DENSITY REPORT FOR ORIGIN/DESTINATION CITY-PAIRS

DATA SOURCE: CABDB4.Y6872.SYNC PERIOD: 1972

MEDIUM DENSITY
AIR TRANSPORTATION
STUDY

DISTANCE RANGE: 700- 799 TRAFFIC DENSITY: 73000- 91249

CITY-PAIRS	DISTANCE UNITS MILES	TRAFFIC UNITS PASSENGERS	TRAFFIC-DISTANCE PRODUCT PASSENGER
MKE NYC	733	85,930	62,986,690
TOTALS 1		85,930	62,986,690

B.2 INITIAL MEDIUM DENSITY NETWORK AND TRAFFIC MODEL

The following series of tables describe the initial medium density network and traffic model. Computer printout sheets are included for a representative part of the total model. Table B-2 lists each airport pair in a range class together with data derived from the 1972 schedule of airline service. Each range class becomes a model element for which pertinent data are summarized in a line of data identified by the range limits. Each piece of data is identified by headings at the top of each page. Table B-3 lists the summary data for each numbered element in the mission model. Essential data are identified by column headers. Table B-4 is the total traffic model with the base year of 1972. Service class refers to the geographic region and airline, passengers per day is equivalent to segment seats demanded per day where a segment is an airport pair route; passengers per day, passengers per trip and seats per trip are not essential to the analysis in this study; the minimum trips is the number of trips actually scheduled in the base year of 1972. Table B-5 is a printout from the operational simulation routine which shows the basic schedule and demand data for 1980 in each of the six geographic regions. Passengers are interpreted as demand for seats by segment and should not be confused with Origin and Destination passengers as recorded by the CAB. The pertinent trips per year is the last column labeled minimum trips, which is the minimum service level to be met by any candidate aircraft.

TABLE B-2

ROUTE DATA BY EQUIPMENT TYPE F7

EQUIPMENT TYPE F7

RANGE CLASS		TRIPS/DAY	SEATS/DAY	SEATS/TRIP		SEAT-MILES	TRIP-MILES	RANGE BAR	RCLASS	TCLASS	NCP	TIME/TRIP
	SEA - TIW	5.00	200.	18	4							
	TIW - SEA	5.00	200.	18	4							
	OLM - TIW	5.00	200.	25	4							
	TIW - OLM	5.00	200.	25	4							
	LWS - PUW	14.00	560.	26	4							
	PUW - LWS	21.00	840.	26	4							
	SFO - SJC	7.00	280.	31	4							
	SJC - SFO	7.00	280.	31	4							
	FAT - EPH	10.00	400.	33	4							
	EPH - FAT	10.00	400.	33	4							
	LAX - SNA	5.00	200.	37	4							
	SNA - LAX	5.00	200.	37	4							
	APV - ONT	7.00	280.	40	4							
	ONT - APV	7.00	280.	40	4							
	ALW - PSC	14.00	560.	41	4							
	PSC - ALW	7.00	280.	41	4							
	HQM - OLM	5.00	200.	49	4							
	LAX - OXR	10.00	400.	49	4							
	OLM - HQM	5.00	200.	49	4							
	OXR - LAX	10.00	400.	49	4							
	IDA - PIH	20.00	800.	50	4							
	PIH - IDA	14.00	560.	50	4							
1- 50		28.29	1131.	40.		42257.	1056.	37	11.	4	22	0.32
	CIC - RDD	13.00	520.	55	4							
	PRB - SMX	12.00	480.	55	4							
	RDD - CIC	13.00	520.	55	4							
	SMX - PRB	12.00	480.	55	4							
	LAX - PMD	14.00	560.	56	4							
	PMD - LAX	14.00	560.	56	4							
	AST - HQM	5.00	200.	57	4							
	HQM - AST	5.00	200.	57	4							
	FAT - YKM	14.00	560.	59	4							
	YKM - FAT	7.00	280.	59	4							
	APV - PMD	7.00	280.	60	4							
	PMD - APV	7.00	280.	60	4							
	IPL - YUM	14.00	560.	63	4							
	YUM - IPL	14.00	560.	63	4							
	ALW - LWS	14.00	560.	64	4							
	GEG - PUW	19.00	760.	64	4							
	LWS - ALW	7.00	280.	64	4							
	PUW - GEG	12.00	480.	64	4							
	SCK - SFO	6.00	240.	65	4							
	SFO - SCK	6.00	240.	65	4							
	SFO - STS	10.00	400.	65	4							
	STS - SFO	10.00	400.	65	4							
	IYK - PMD	5.00	200.	67	4							
	PMD - IYK	5.00	200.	67	4							
	CEC - EKA	13.00	520.	68	4							
	EKA - CEC	13.00	520.	68	4							
	BKE - ONO	5.00	200.	69	4							
	ONO - BKE	5.00	200.	69	4							
	PSC - YKM	5.00	200.	72	4							
	PUW - ALW	7.00	280.	72	4							
	YKM - PSC	5.00	200.	72	4							
	AST - PDX	5.00	200.	73	4							
	PDX - AST	5.00	200.	73	4							
	GCN - PGA	7.00	280.	77	4							
	PGA - GCN	7.00	280.	77	4							

	SFO	-	SMF	34.00	1360.	86	4							
	SMF	-	SFO	34.00	1360.	86	4							
	PHX	-	PRC	10.00	400.	87	4							
	PRC	-	PHX	10.00	400.	87	4							
	CVO	-	OTH	13.00	520.	88	4							
	OTH	-	CVO	13.00	520.	88	4							
	IGM	-	LAS	10.00	400.	89	4							
	LAS	-	IGM	10.00	400.	89	4							
	LWS	-	GEG	7.00	280.	90	4							
	IGM	-	PRC	10.00	400.	95	4							
	PRC	-	IGM	10.00	400.	95	4							
	SEA	-	EAT	7.00	280.	98	4							
51- 100			73.57		3143.	40.		229583.	5740.	73	11.	4	53	0.47
	LWS	-	PSC	7.00	280.	101	4							
	PSC	-	PUW	7.00	280.	101	4							
	SEA	-	YKM	14.00	560.	103	4							
	YKM	-	SEA	14.00	560.	103	4							
	BLH	-	PSP	5.00	200.	104	4							
	PSP	-	BLH	5.00	200.	104	4							
	CDC	-	PGA	7.00	280.	106	4							
	PGA	-	CDC	7.00	280.	106	4							
	BFL	-	LAX	6.00	240.	109	4							
	LAX	-	BFL	6.00	240.	109	4							
	LAX	-	PSP	18.00	720.	109	4							
	PSP	-	LAX	18.00	720.	109	4							
	YKM	-	ALW	7.00	280.	112	4							
	CEC	-	OTH	13.00	520.	114	4							
	OTH	-	CEC	13.00	520.	114	4							
	BKE	-	PSC	5.00	200.	116	4							
	PDX	-	RDM	7.00	280.	116	4							
	PSC	-	BKE	5.00	200.	116	4							
	RDM	-	PDX	7.00	280.	116	4							
	LMT	-	RDD	7.00	280.	118	4							
	RDD	-	LMT	7.00	280.	118	4							
	PDX	-	YKM	5.00	200.	119	4							
	YKM	-	PDX	5.00	200.	119	4							
	LAS	-	LHU	5.00	200.	120	4							
	LHU	-	LAS	5.00	200.	120	4							
	PDX	-	SEA	7.00	280.	129	4							
	SEA	-	PDX	7.00	280.	129	4							
	LAX	-	SMX	10.00	400.	134	4							
	SMX	-	LAX	10.00	400.	134	4							
	IPL	-	SNA	5.00	200.	139	4							
	SNA	-	IPL	5.00	200.	139	4							
	LMT	-	RDM	7.00	280.	148	4							
	RDM	-	LMT	7.00	280.	148	4							
101- 150			37.57		1503.	40.		174720.	4368.	116	11.	4	33	0.68
	CIC	-	SFO	13.00	520.	152	4							
	SFO	-	CIC	13.00	520.	152	4							
	BLH	-	PHX	5.00	200.	156	4							
	PHX	-	BLH	5.00	200.	156	4							
	SFO	-	TVL	5.00	200.	156	4							
	TVL	-	SFO	5.00	200.	156	4							
	PHX	-	YUM	14.00	560.	160	4							
	YUM	-	PHX	14.00	560.	160	4							
	PRB	-	SFO	12.00	480.	166	4							
	SFO	-	PRB	12.00	480.	166	4							
	PDX	-	RBG	5.00	200.	167	4							
	RBG	-	PDX	5.00	200.	167	4							
	GCN	-	LAS	14.00	560.	169	4							

	LAS - SCK	14.00	560.	169	4								
	PSC - SEA	14.00	560.	172	4								
	SEA - PSC	7.00	280.	172	4								
	LAS - PSP	7.00	280.	173	4								
	PSP - LAS	7.00	280.	173	4								
	GCN - PHX	7.00	280.	174	4								
	PHX - GCN	7.00	280.	174	4								
	IPL - LAX	14.00	560.	176	4								
	LAX - IPL	14.00	560.	176	4								
	BOI - PIH	14.00	560.	188	4								
	PIH - BOI	20.00	800.	188	4								
	RNO - SJC	7.00	280.	188	4								
	SJC - RNO	7.00	280.	188	4								
	LAS - ONT	28.00	1120.	197	4								
	ONT - LAS	28.00	1120.	197	4								
	BOI - LWS	7.00	280.	198	4								
	LWS - BOI	7.00	280.	198	4								
	RDD - SFO	7.00	280.	199	4								
	SFO - RDD	7.00	280.	199	4								
151- 200		49.29	1971.	40.		348286.	8707.	176	11.	4	32	0.93	
	BOI - IDA	6.00	240.	209	4								
	CDC - SLC	7.00	280.	221	4								
	SLC - CDC	7.00	280.	221	4								
	BUR - LAS	2.00	80.	222	4								
	LAS - BUR	2.00	80.	222	4								
	BFL - LAS	7.00	280.	223	4								
	LAS - BFL	7.00	280.	223	4								
	BOI - PUW	5.00	200.	224	4								
	PUW - BOI	5.00	200.	224	4								
	LAX - LHU	5.00	200.	234	4								
	LHU - LAX	5.00	200.	234	4								
	LMT - SMF	7.00	280.	238	4								
	SMF - LMT	7.00	280.	238	4								
	EKA - SFO	13.00	520.	240	4								
	SFO - EKA	13.00	520.	240	4								
	LMT - PDX	7.00	280.	241	4								
	PDX - LMT	7.00	280.	241	4								
	SBA - SFO	7.00	280.	263	4								
	SFO - SBA	7.00	280.	263	4								
201- 300		18.00	720.	40.		168949.	4224.	234	11.	4	19	1.18	
TOTALS		211.71	8469.	40.		963794.	24095.	113			159	0.65	

FOLDOUT FRAME 1

FOLDOUT FRAME 2

TABLE B-3

SUMMARY OF ROUTE DATA BY MODEL ELEMENT NUMBER

EQUIPMENT F7

ELEMENT NO.	EQUPT	RANGE	SEATS/DAY FRACTION	TRIPS/DAY FRACTION	SEAT-MILES FRACTION	TRIP-MILES FRACTION	RANGE CLASS	SERVICE CLASS	AIRPORT PAIRS
114	F7	37.	1131.0	28.3	42257.	1056.	11.	4	22
			**********	28.28999329	0.000025468	0.000079308			
115	F7	73.	3143.0	78.6	229583.	5740.	11.	4	53
			**********	78.56999207	0.000138370	0.000431087			
116	F7	116.	1503.0	37.6	174720.	4368.	11.	4	33
			**********	37.56999207	0.000105304	0.000328047			
117	F7	176.	1971.0	49.3	348286.	8707.	11.	4	32
			**********	49.28999329	0.000209912	0.000653916			
118	F7	234.	720.0	18.0	168949.	4224.	11.	4	19
			**********	18.00000000	0.000101825	0.000317232			
EQUIPMENT TOTALS			8468.	212.	963795.	24095.			
			0.00326169	0.00638711	0.000580879	0.001809591			159

TABLE B-4

1972
AIR TRANSPORTATION FORECAST

SERVICE CLASS	RANGE ST.MI	PSNGRS /DAY	TRIPS /DAY	SEATS /DAY	PSNGR /TRIP	SEATS /TRIP	MIN.	TRIPS	OPERATION CLASS
1	43.	435.	120.	888.	3.6	7.4		12.	11.
1	69.	1849.	510.	3774.	3.6	7.4		51.	11.
1	126.	2865.	790.	5846.	3.6	7.4		79.	11.
1	184.	1342.	370.	2738.	3.6	7.4		37.	11.
1	253.	4206.	1160.	8584.	3.6	7.4		116.	11.
1	349.	1777.	490.	3626.	3.6	7.4		49.	11.
1	443.	254.	70.	518.	3.6	7.4		7.	11.
1	535.	109.	30.	222.	3.6	7.4		3.	11.
1	642.	73.	20.	148.	3.6	7.4		2.	11.
1	22.	175.	259.	358.	0.7	1.5		24.	11.
1	121.	103.	140.	210.	0.7	1.5		14.	11.
1	32.	219.	297.	446.	0.7	1.5		30.	11.
3	43.	23.	30.	45.	0.8	1.5		3.	11.
3	65.	78.	100.	150.	0.8	1.5		10.	11.
1	78.	624.	849.	1273.	0.7	1.5		85.	11.
1	109.	170.	231.	347.	0.7	1.5		23.	11.
3	135.	31.	40.	60.	0.8	1.5		4.	11.
3	160.	8.	10.	15.	0.8	1.5		1.	11.
1	173.	78.	106.	159.	0.7	1.5		11.	11.
1	36.	1106.	451.	2257.	2.4	5.0		45.	11.
2	43.	1358.	571.	2743.	2.4	4.8		57.	11.
3	43.	1300.	500.	2500.	2.6	5.0		50.	11.
3	70.	3633.	1397.	6986.	2.6	5.0		140.	11.
1	72.	2548.	1040.	5200.	2.4	5.0		104.	11.
2	73.	6171.	2596.	12467.	2.4	4.8		260.	11.
1	121.	2275.	929.	4643.	2.4	5.0		93.	11.
2	122.	2359.	993.	4766.	2.4	4.8		99.	11.
3	124.	2931.	1127.	5636.	2.6	5.0		113.	11.
3	173.	1493.	574.	2871.	2.6	5.0		57.	11.
1	174.	2587.	1056.	5279.	2.5	5.0		106.	11.
2	175.	563.	237.	1138.	2.4	4.8		24.	11.
3	234.	988.	380.	1900.	2.6	5.0		38.	11.
1	238.	1687.	689.	3443.	2.4	5.0		69.	11.
2	239.	720.	303.	1454.	2.4	4.8		30.	11.
1	320.	154.	63.	314.	2.4	5.0		6.	11.
2	325.	129.	54.	261.	2.4	4.8		5.	11.
3	359.	130.	50.	250.	2.6	5.0		5.	11.
3	404.	208.	80.	400.	2.6	5.0		8.	11.
1	536.	49.	20.	100.	2.4	5.0		2.	11.
5	40.	434.	221.	886.	2.0	4.0		22.	11.
5	76.	1638.	836.	3343.	2.0	4.0		84.	11.
5	124.	1176.	600.	2400.	2.0	4.0		60.	11.
5	173.	627.	320.	1280.	2.0	4.0		32.	11.
5	239.	221.	113.	451.	2.0	4.0		11.	11.
5	369.	20.	10.	40.	2.0	4.0		1.	11.
2	35.	68.	19.	137.	3.6	7.4		2.	11.
5	38.	357.	97.	729.	3.7	7.5		10.	11.
4	38.	195.	54.	407.	3.6	7.5		5.	11.
2	74.	487.	133.	983.	3.7	7.4		13.	11.
5	75.	3003.	817.	6129.	3.7	7.5		82.	11.

1972
AIR TRANSPORTATION FORECAST

SERVICE CLASS	RANGE ST.MI	PSNGRS /DAY	TRIPS /DAY	SEATS /DAY	PSNGR /TRIP	SEATS /TRIP	MIN. TRIPS	OPERATION CLASS
4	76.	143.	40.	300.	3.6	7.5	4.	11.
4	110.	251.	70.	525.	3.6	7.5	7.	11.
2	128.	549.	150.	1110.	3.7	7.4	15.	11.
5	128.	1859.	506.	3793.	3.7	7.5	51.	11.
4	173.	179.	50.	375.	3.6	7.5	5.	11.
5	176.	2656.	723.	5421.	3.7	7.5	72.	11.
2	179.	178.	49.	359.	3.7	7.4	5.	11.
4	235.	522.	146.	1093.	3.6	7.5	15.	11.
5	238.	2872.	781.	5861.	3.7	7.5	78.	11.
2	255.	623.	170.	1258.	3.7	7.4	17.	11.
5	333.	782.	213.	1596.	3.7	7.5	21.	11.
4	350.	532.	149.	1114.	3.6	7.5	15.	11.
2	439.	131.	36.	264.	3.7	7.4	4.	11.
4	450.	72.	20.	150.	3.6	7.5	2.	11.
5	454.	609.	166.	1243.	3.7	7.5	17.	11.
2	563.	73.	20.	148.	3.7	7.4	2.	11.
5	579.	73.	20.	150.	3.7	7.5	2.	11.
5	642.	431.	117.	879.	3.7	7.5	12.	11.
2	660.	37.	10.	74.	3.7	7.4	1.	11.
5	784.	110.	30.	225.	3.7	7.5	3.	11.
5	866.	73.	20.	150.	3.7	7.5	2.	11.
4	27.	471.	96.	986.	4.9	10.3	10.	11.
2	41.	250.	51.	505.	4.9	9.8	5.	11.
1	49.	7.	1.	14.	4.9	10.0	0.	11.
1	72.	1323.	270.	2700.	4.9	10.0	27.	11.
2	75.	3358.	691.	6784.	4.9	9.8	69.	11.
4	76.	964.	196.	2016.	4.9	10.3	20.	11.
4	118.	2166.	440.	4532.	4.9	10.3	44.	11.
2	125.	2819.	579.	5695.	4.9	9.8	58.	11.
1	125.	1470.	300.	3000.	4.9	10.0	30.	11.
4	177.	457.	93.	956.	4.9	10.3	9.	11.
2	179.	1763.	363.	3562.	4.9	9.8	36.	11.
1	188.	1421.	290.	2900.	4.9	10.0	29.	11.
4	246.	2651.	539.	5547.	4.9	10.3	54.	11.
2	249.	3726.	767.	7528.	4.9	9.8	77.	11.
1	252.	5439.	1110.	11100.	4.9	10.0	111.	11.
2	325.	443.	91.	895.	4.8	9.8	9.	11.
1	339.	2695.	550.	5500.	4.9	10.0	55.	11.
4	351.	1554.	316.	3252.	4.9	10.3	32.	11.
1	425.	2240.	457.	4571.	4.9	10.0	46.	11.
4	450.	464.	94.	971.	4.9	10.3	9.	11.
2	461.	466.	97.	942.	4.8	9.7	10.	11.
1	528.	245.	50.	500.	4.9	10.0	5.	11.
4	537.	584.	119.	1221.	4.9	10.3	12.	11.
2	560.	466.	97.	942.	4.8	9.7	10.	11.
4	629.	204.	41.	427.	4.9	10.3	4.	11.
1	658.	392.	80.	800.	4.9	10.0	8.	11.
2	691.	294.	60.	594.	4.9	9.9	6.	11.
1	732.	294.	60.	600.	4.9	10.0	6.	11.
2	736.	378.	77.	764.	4.9	9.9	8.	11.

FOLDOUT FRAME 1

FOLDOUT FRAME 2

1972
AIR TRANSPORTATION FORECAST

SERVICE CLASS	RANGE ST.MI	PSNGRS /DAY	TRIPS /DAY	SEATS /DAY	PSNGR /TRIP	SEATS /TRIP	MIN. TRIPS	OPERATION CLASS
4	783.	42.	9.	88.	4.9	10.2	1.	11.
1	873.	98.	20.	200.	4.9	10.0	2.	11.
4	973.	14.	3.	29.	4.8	10.0	0.	11.
1	33.	139.	64.	283.	2.2	4.4	6.	11.
2	45.	556.	244.	1124.	2.3	4.6	24.	11.
1	73.	1001.	464.	2043.	2.2	4.4	46.	11.
2	77.	2957.	1299.	5973.	2.3	4.6	130.	11.
1	117.	413.	191.	842.	2.2	4.4	19.	11.
2	126.	1704.	749.	3443.	2.3	4.6	75.	11.
1	166.	123.	57.	251.	2.2	4.4	6.	11.
2	180.	511.	224.	1032.	2.3	4.6	22.	11.
1	228.	160.	74.	327.	2.2	4.4	7.	11.
2	249.	140.	61.	283.	2.3	4.6	6.	11.
4	37.	641.	283.	1131.	1.9	4.0	28.	11.
4	73.	1502.	786.	3143.	1.9	4.0	79.	11.
4	116.	718.	376.	1503.	1.9	4.0	38.	11.
4	176.	942.	493.	1971.	1.9	4.0	49.	11.
4	234.	344.	180.	720.	1.9	4.0	18.	11.
1	54.	90.	114.	183.	0.8	1.6	11.	11.
5	38.	608.	310.	1240.	2.0	4.0	31.	11.
5	78.	1655.	844.	3377.	2.0	4.0	84.	11.
5	131.	490.	250.	1000.	2.0	4.0	25.	11.
5	164.	577.	294.	1177.	2.0	4.0	29.	11.
5	249.	84.	43.	171.	2.0	4.0	4.	11.
1	25.	191.	150.	390.	1.3	2.6	15.	11.
1	120.	153.	120.	312.	1.3	2.6	12.	11.
1	55.	114.	123.	233.	0.9	1.9	12.	11.
3	45.	50.	60.	96.	0.8	1.6	6.	11.
1	67.	545.	586.	1113.	0.9	1.9	59.	11.
3	88.	67.	80.	128.	0.8	1.6	8.	11.
3	125.	67.	80.	128.	0.8	1.6	8.	11.
2	176.	129.	137.	261.	0.9	1.9	14.	11.
1	34.	1079.	367.	2203.	2.9	6.0	37.	11.
1	75.	3453.	1174.	7046.	2.9	6.0	117.	11.
1	123.	1441.	490.	2940.	2.9	6.0	49.	11.
1	170.	828.	281.	1689.	2.9	6.0	28.	11.
1	251.	681.	231.	1389.	2.9	6.0	23.	11.
1	347.	172.	59.	351.	2.9	6.0	6.	11.
6	30.	1182.	110.	1738.	10.7	15.8	11.	11.
6	92.	231.	21.	339.	10.8	15.8	2.	11.
6	114.	3454.	321.	5079.	10.7	15.8	32.	11.
6	296.	1535.	143.	2257.	10.7	15.8	14.	11.
6	336.	9408.	876.	13836.	10.7	15.8	88.	11.
6	447.	614.	57.	903.	10.8	15.8	6.	11.
6	83.	226.	30.	333.	7.5	11.1	3.	11.
6	113.	377.	50.	555.	7.5	11.1	5.	11.
6	158.	43.	6.	63.	7.5	11.1	1.	11.
6	209.	43.	6.	65.	7.5	11.1	1.	11.
6	346.	517.	69.	761.	7.5	11.1	7.	11.
6	447.	216.	29.	317.	7.5	11.1	3.	11.

FOLDOUT FRAME 1

FOLDOUT FRAME 2

1972
AIR TRANSPORTATION FORECAST

SERVICE CLASS	RANGE ST.MI	PSNGRS /DAY	TRIPS /DAY	SEATS /DAY	PSNGR /TRIP	SEATS /TRIP	MIN. TRIPS	OPERATION CLASS
6	30.	1385.	221.	2037.	6.3	9.2	22.	11.
3	37.	50.	10.	97.	5.0	9.7	1.	11.
3	59.	137.	27.	263.	5.0	9.7	3.	11.
1	80.	1455.	330.	2970.	4.4	9.0	33.	11.
6	81.	2271.	326.	3339.	7.0	10.3	33.	11.
3	106.	353.	70.	679.	5.0	9.7	7.	11.
6	112.	1142.	150.	1680.	7.6	11.2	15.	11.
1	141.	939.	213.	1916.	4.4	9.0	21.	11.
6	158.	261.	34.	384.	7.6	11.2	3.	11.
3	175.	577.	114.	1109.	5.0	9.7	11.	11.
1	181.	1336.	303.	2726.	4.4	9.0	30.	11.
6	212.	588.	77.	864.	7.6	11.2	8.	11.
3	224.	792.	157.	1524.	5.0	9.7	16.	11.
1	255.	1254.	284.	2559.	4.4	9.0	28.	11.
1	347.	1178.	267.	2404.	4.4	9.0	27.	11.
6	347.	4693.	681.	6901.	6.9	10.1	68.	11.
3	347.	937.	186.	1801.	5.0	9.7	19.	11.
1	405.	208.	47.	424.	4.4	9.0	5.	11.
6	454.	556.	79.	817.	7.1	10.4	8.	11.
3	460.	476.	94.	915.	5.0	9.7	9.	11.
1	517.	44.	10.	90.	4.4	9.0	1.	11.
3	566.	490.	97.	942.	5.0	9.7	10.	11.
1	628.	44.	10.	90.	4.4	9.0	1.	11.
3	636.	879.	174.	1691.	5.0	9.7	17.	11.
3	779.	303.	60.	582.	5.0	9.7	6.	11.

FOLDOUT FRAME 1

FOLDOUT FRAME 2

TABLE B-5

04/16/74 13.23.23

1980 ANNUAL TRAFFIC STATISTICS

SERVICE CLASS TRIPS/DAY MIN	MAX	PASSENGERS (MILL)	SEATS (MILL)	TRIPS (MILL)	RPM (BIL)	SEAT-MILES (BILL)	TRIP-MILES (BILL)	PAX / TRIP	SEAT/ TRIP	R-BAR SEATS (STATUTE	R-BAR TRIPS MILES)	AIRPORT PAIRS	MIN. TRIPS (MILL)
1.4 -	61.4	33.361	68.083	6.887	6.460	13.184	1.137	5.7	11.6	194.	165.	902.	0.689
6.7 -	68.5	19.434	39.262	3.989	2.971	6.002	0.539	5.5	11.1	153.	135.	613.	0.399
9.0 -	43.6	9.308	17.899	2.007	1.897	3.648	0.334	5.7	10.9	204.	167.	343.	0.201
1.4 -	23.6	9.026	18.882	1.675	1.859	3.889	0.302	6.2	12.9	206.	180.	322.	0.168
8.6 -	29.3	11.842	24.166	2.676	1.991	4.063	0.408	4.9	9.9	168.	153.	433.	0.268
5.0 -	80.3	16.720	24.588	1.199	4.120	6.058	0.289	14.2	20.9	246.	241.	119.	0.120
TOTAL													
5.0 -	61.4	99.689	192.880	18.433	19.297	36.843	3.010	6.4	12.2	191.	163.	2732.	1.843

AVERAGE TRAFFIC GROWTH RATES FROM 1972 BASE YEAR IN PERCENT/YEAR
0.0 0.0 0.0

RANGE CLASS / NUMBER OF ELEMENTS --- 58/ 0 -- 48/ 0 -- 35/ 0 -- 24/ 0 -- 16/ 0 -- 0/175

FOLDOUT FRAME 1

C-3

FOLDOUT FRAME 2

B.3 FINAL MEDIUM DENSITY NETWORK

The final medium density network is described by a series of three tables. Table B-6 details the information by airport pair, airline code (as listed in the Official Airline Guide (OAG)), and by type of equipment used on routes between each airport pair. In Table B-6, RW is Hughes Airwest and Equipment F-27 is the F-27 Turboprop Aircraft. The arrangement of the data generally follows the format in Table B-2 in Section B.2 preceding. Table B-7, Summary of Route Data by Model Number - 1974 is comparable to Table B-3 in the previous section. The total model is represented partially by data from elements 51 to 100 as shown in Table B-8. The format is slightly different from the tabulated information representative of the initial traffic network. Minimum and maximum trips are equal to schedules from 1974 data.

TABLE B-6
ROUTE DATA BY EQUIPMENT TYPE F27 1974
EQUIPMENT TYPE F27

RANGE CLASS		TRIPS/DAY		SEATS/DAY	SEATS/TRIP	SEAT-MILES	TRIP-MILES	RANGE BAR	RCLASS	SCLASS	NAP	TIME/TRIP	FUEL (LBS.)
	RW	LWS - PUW		35.00	1400.	26	1 1						
	RW	EAT - EPH		21.00	840.	34	1 1						
	RW	ALW - PSC		21.00	840.	41	1 1						
1- 50		11.00	440.	40.	14200.		355.	32	10001.	1	3	1.05	5460.
	RW	IDA - PIH		28.00	1120.	51	1 1						
	RW	LAX - PMD		24.00	960.	52	1 1						
	RW	ACV - CEC		24.00	960.	55	1 1						
	RW	IPL - YUM		14.00	560.	58	1 1						
	RW	SCK - SMF		12.00	480.	60	1 1						
	RW	ALW - LWS		7.00	280.	65	1 1						
	RW	SCK - SFO		18.00	720.	65	1 1						
	RW	SFO - STS		18.00	720.	66	1 1						
	RW	SMF - STS		12.00	480.	67	1 1						
	RW	ALW - PUW		21.00	840.	73	1 1						
	RW	AST - PDX		12.00	480.	74	1 1						
	RW	EPH - PSC		7.00	280.	75	1 1						
	RW	GCN - PGA		10.00	400.	76	1 1						
	RW	SFO - SMF		14.00	560.	80	1 1						
	RW	EAT - SEA		21.00	840.	99	1 1						
51- 100		34.57	1383.	40.	92309.		2308.	66	10001.	1	15	1.31	27703.
	RW	SEA - YKM		7.00	280.	103	1 1						
	RW	BLH - PSP		12.00	480.	105	1 1						
	RW	CDC - PGA		10.00	400.	106	1 1						
	RW	LAX - PSP		26.00	1040.	110	1 1						
	RW	ALW - YKM		7.00	280.	113	1 1						
	RW	GCN - IGM		10.00	400.	113	1 1						
	RW	CEC - OTH		24.00	960.	115	1 1						
	RW	AST - SEA		12.00	480.	116	1 1						
	RW	CDC - GCN		2.00	80.	132	1 1						
	RW	EPH - LWS		14.00	560.	135	1 1						
101- 150		17.71	709.	40.	80731.		2018.	113	10001.	1	10	1.77	20876.
	RW	BLH - PHX		12.00	480.	157	1 1						
	RW	PHX - YUM		14.00	560.	161	1 1						
	RW	IGM - PHX		10.00	400.	168	1 1						
	RW	OTH - PLX		24.00	960.	171	1 1						
	RW	GCN - PHX		2.00	80.	175	1 1						
	RW	IPL - LAX		14.00	560.	181	1 1						
	RW	BOI - PIH		28.00	1120.	189	1 1						
151- 200		14.86	594.	40.	103417.		2585.	174	10001.	1	7	2.90	23576.
	RW	BOI - IDA		24.00	960.	209	1 1						
	RW	CDC - SLC		10.00	400.	222	1 1						
201- 300		4.86	194.	40.	41349.		1034.	212	10001.	1	2	3.45	8949.
TOTALS		83.00	3320.	40.	332006.		8300.	100			37	1.79	86562.

TABLE B-7
SUMMARY OF ROUTE DATA BY MODEL NUMBER 1974

EQUIPMENT F27

ELEMENT NO.	EQUPT	RANGE	SEATS/DAY FRACTION	TRIPS/DAY FRACTION	SEAT-MILES FRACTION	TRIP-MILES FRACTION	RANGE CLASS	SERVICE CLASS	AIRPORT PAIRS
82	F27	32.	440.0	11.0	14200.	355.	10001.	1	3
			**********11.00000000		0.000007496	0.000025290			
83	F27	66.	1382.9	34.6	92309.	2308.	10001.	1	15
			**********34.57142639		0.000048727	0.000164399			
84	F27	113.	708.6	17.7	80731.	2018.	10001.	1	10
			**********17.71427917		0.000042616	0.000143781			
85	F27	174.	594.3	14.9	103417.	2585.	10001.	1	7
			**********14.85714245		0.000054591	0.000184183			
86	F27	212.	194.3	4.9	41349.	1034.	10001.	1	2
			********** 4.85714245		0.000021827	0.000073641			
EQUIPMENT TOTALS			3320.	83.	332006.	8300.			
			0.00113825	0.00238711	0.000175257	0.000591293			37

TABLE B-8
DETAIL OF MODEL DATA BY ELEMENT NUMBER 1974

ID	RANGE	PAX	MXTRIP	SEATS	SERV	NCP	PCLASS	MNTRIP
51	444.	884.	21.	1683.	1	146039	10001.	21.
52	547.	690.	17.	1315.	1	137666	20001.	17.
53	627.	485.	12.	924.	1	106494	20001.	12.
54	772.	349.	8.	664.	1	86926	20001.	8.
55	851.	170.	4.	324.	1	47003	20001.	4.
56	29.	1658.	184.	3157.	2	28890	10001.	184.
57	31.	765.	82.	1456.	1	12786	10001.	82.
58	68.	1706.	176.	3253.	1	51725	10001.	176.
59	74.	1136.	127.	2164.	2	39620	10001.	127.
60	117.	780.	84.	1486.	2	36829	10001.	84.
61	122.	563.	58.	1072.	1	27407	10001.	58.
62	151.	50.	6.	95.	1	3130	10001.	6.
63	172.	9.	1.	17.	2	495	10001.	1.
64	231.	110.	12.	210.	2	8620	10001.	12.
65	41.	1015.	19.	1932.	1	39930	10001.	19.
66	77.	6405.	124.	12200.	1	315829	10001.	124.
67	122.	7411.	142.	14117.	1	479095	10001.	142.
68	178.	3724.	71.	7093.	1	296491	10001.	71.
69	249.	8866.	169.	16887.	1	871509	10001.	169.
70	343.	3998.	76.	7614.	1	494744	10001.	76.
71	456.	2451.	47.	4669.	1	363791	10001.	47.
72	543.	1400.	27.	2666.	1	231835	20001.	27.
73	667.	1056.	20.	2012.	1	204703	20001.	20.
74	783.	108.	2.	206.	1	23146	20001.	2.
75	834.	267.	5.	509.	1	59933	20001.	5.
76	40.	528.	23.	1006.	1	10685	10001.	23.
77	76.	3415.	148.	6506.	1	112068	10001.	148.
78	125.	1831.	79.	3489.	1	93344	10001.	79.
79	174.	752.	33.	1433.	1	47687	10001.	33.
80	240.	284.	12.	541.	1	23516	10001.	12.
81	356.	86.	4.	163.	1	10198	10001.	4.
82	32.	231.	11.	440.	1	5460	10001.	11.
83	66.	726.	35.	1383.	1	27702	10001.	35.
84	113.	372.	18.	709.	1	20875	10001.	18.
85	174.	312.	15.	594.	1	23575	10001.	15.
86	212.	102.	5.	194.	1	8948	10001.	5.
87	54.	94.	11.	178.	1	1814	10001.	11.
88	38.	390.	19.	743.	1	8313	10001.	19.
89	78.	1002.	48.	1909.	1	34217	10001.	48.
90	138.	285.	14.	543.	1	15114	10001.	14.
91	178.	249.	12.	474.	1	16537	10001.	12.
92	210.	18.	1.	34.	1	1337	10001.	1.
93	27.	238.	17.	453.	1	3664	10001.	17.
94	138.	19.	1.	37.	1	924	10001.	1.
95	196.	94.	7.	178.	1	6721	10001.	7.
96	44.	126.	13.	239.	2	1861	10001.	13.
97	65.	254.	27.	483.	2	4635	10001.	27.
98	119.	454.	48.	864.	2	15154	10001.	48.
99	163.	143.	15.	273.	2	5258	10001.	15.
100	234.	100.	11.	190.	2	4965	10001.	11.

FOLDOUT FRAME 1

FOLDOUT FRAME 2

B.4 OPERATIONAL SIMULATION INPUT AND OUTPUT STATISTICS

Some basic characteristics of conceptual aircraft are shown in Tables B-9 and B-10. These characteristics are partially input and output from the Design/Cost/DOC module of the Performance Evaluation Technique used for operational simulation. In Table B-9, characteristics of seven aircraft are listed. The ID numbers refer to the following tabulations:

ID	Seats	Field Length (Ft/M)	Range (N.Mi/Km)
5311	50	4,500 (1372)	775 (1435)
5111	50	4,500	563 (1042)
5211	50	4,500	337 (624)
3011	30	4,500	566 (1048)
7011	70	4,500	562 (1041)
5411	50	3,500 (1066)	564 (1044)
5611	50	5,500 (1676)	565 (1046)

Weight and performance data generally are input with program and operating costs as output.

Table B-10 presents the DOC functions of the same conceptual aircraft. The cost data is presented at one-tenth increments of design range. The Cost per Trip (actual) is the cost at each range increment computed by the Dougals DOC cost formula discussed in Section 13.1. The Cost per Trip (calculated) is the actual function fitted to a straight line representative of the initial points. It is this line function which is presented in the equation for $/Trip. A similar curve fit is made to represent the Block Time function with the equations shown.

Table B-11 lists input and output cost characteristics for five aircraft used in the final network competitive evaluation. The ID numbers are consistent with the seating capacities of 30 to 70. Data blanks or zeros (0) represent computations in the Design segment of the program module. For these aircraft, that segment was bypassed.

Table B-12 lists DOC data and functions derived and presented in the same manner as in Table B-10.

TABLE B-9
DATA INPUT AND PRELIMINARY COST CHARACTERISTICS FOR SEVERAL CONCEPTUAL AIRCRAFT

05/16/74 18.01.07

PRODUCT ID		5311	5111	5211	3011	7011	5411	5611
INTRODUCTION DATE		1980	1980	1980	1980	1980	1980	1980
CRUISE MACH NUMBER		0.700	0.685	0.685	0.650	0.700	0.650	0.710
DESIGN RANGE	(N.MI)	775.	563.	337.	566.	562.	564.	565.
DESIGN PAYLOAD	(NO. SEATS)	50.	50.	50.	30.	70.	50.	50.
INITIAL CRUISE ALTITUDE	(FT)	25000.	25000.	25000.	22000.	24000.	22000.	24000.
TAKE-OFF FIELD LENGTH	(FT)							
LANDING FIELD LENGTH	(FT)							
NO. OF ENGINES		2.	2.	2.	2.	2.	2.	2.
ENGINE TYPE		HIBYPASS	HIBYPASS	HIBYPASS	HIBYPASS	HIBYPASS	HIBYPASS	HIBYPASS
OPERATING PURPOSE		DOMESTIC	DOMESTIC	DOMESTIC	DOMESTIC	DOMESTIC	DOMESTIC	DOMESTIC
NO. OF FLIGHT CREW		2.	2.	2.	2.	2.	2.	2.
BREAK-POINT CAPACITY	(SEATS)							
BREAK-POINT RANGE	(N.MI)							
RANGE AT ZERO PAYLOAD	(N.MI)							
GROSS WEIGHT	(LBS)	46600.	43920.	41340.	32080.	56730.	48150.	42220.
LANDING WEIGHT	(LBS)	40510.	39050.	37706.	28211.	50850.	42840.	37430.
ZERO FUEL WEIGHT	(LBS)	37960.	37040.	36180.	26590.	48380.	40650.	35460.
OPERATOR WEIGHT EMPTY	(LBS)	27960.	27040.	26180.	20590.	34380.	30650.	25460.
MANUFACTURER WEIGHT EMPTY	(LBS)	26964.	26050.	25197.	19673.	33153.	29631.	24487.
AIRFRAME WEIGHT	(LBS)	23706.	22980.	22309.	17431.	29187.	26937.	21421.
CAPACITY FUEL	(LBS)	13270.	12422.	11517.	8581.	17015.	21437.	8579.
WING AREA	(SQ.FT)	528.	497.	468.	363.	642.	746.	374.
TAKE-OFF THRUST PER ENGINE	(LB)	8470.	7980.	7510.	5830.	10310.	8410.	7970.
FUEL CONSUMPTION	(LBS/HR)	2698.	2849.	3395.	2152.	3504.	2951.	2889.
PRODUCTION RATE PER MONTH		8.	8.	8.	8.	8.	8.	8.
BREAK EVEN UNIT		400.	400.	400.	400.	400.	400.	400.
NEW DEVELOPMENT FACTOR		1.00	1.00	1.00	1.00	1.00	1.00	1.00
PRICE TO COST RATIO		0.8500	0.8500	0.8500	0.8500	0.8500	0.8500	0.8500
DEVELOPMENT COST	($ MILLION)	118.589	111.261	105.765	82.756	139.808	114.104	112.089
UNIT PRICE	($ MILLION)	3.299	3.125	2.982	2.409	3.847	3.256	3.105
ENGINES PRICE	($ MILLION)	0.662	0.631	0.601	0.493	0.780	0.658	0.630
OPERATIONAL LOAD FACTR		0.500	0.500	0.500	0.500	0.500	0.500	0.500
ANNUAL UTILIZATION	(HRS)	3682.	3453.	3113.	3494.	3439.	3495.	3429.
DOLLARS PER FLIGHT		898.52	692.10	463.88	628.83	770.93	748.58	670.87
DOLLARS PER N.MILE		1.16	1.23	1.38	1.11	1.37	1.33	1.19
CENTS PER SEAT-N.MILE		2.319	2.459	2.753	3.703	1.960	2.655	2.375
BLOCK TIME	(HRS)	2.257	1.709	1.071	1.798	1.678	1.800	1.658

FOLDOUT FRAME 1

FOLDOUT FRAME 2

TABLE B-10
DIRECT OPERATING COST AT DECIMAL VARIATIONS OF DESIGN RANGE - INITIAL CONCEPTUAL AIRCRAFT

05/16/74 18.01.07

AIRCRAFT 5311 DIRECT OPERATING COST

RANGE	(N. MILES)	77.50	155.00	232.50	310.00	387.50	465.00	542.50	620.00	697.50	775.00
*** ATA DIRECT OPERATING COST *** $ / TRIP = (92.154) + (1.040) * RANGE											
$ / TRIP	(ACTUAL)	167.08	251.99	335.28	417.37	498.56	579.06	659.04	738.61	817.86	891.72
$ / TRIP	(CALCULATED)	172.79	253.43	334.06	414.70	495.34	575.97	656.61	737.25	817.88	898.52
$ / HOUR	(CALCULATED)	510.89	459.61	436.93	424.14	415.92	410.20	405.99	402.76	400.21	398.13
$ / N. MILE	(CALCULATED)	2.23	1.64	1.44	1.34	1.28	1.24	1.21	1.19	1.17	1.16
CENT/SEAT=N.MI.	(CALCULATED)	4.459	3.270	2.874	2.675	2.557	2.477	2.421	2.378	2.345	2.319
*** ATA DOC LESS DEPRICIATION *** $ / TRIP = (71.782) + (0.898) * RANGE											
$ / TRIP	(ACTUAL)	140.02	210.38	280.52	350.50	420.36	490.12	559.81	629.45	699.04	764.07
$ / TRIP	(CALCULATED)	141.35	210.93	280.50	350.07	419.64	489.22	558.79	628.36	697.93	767.50
$ / HOUR	(CALCULATED)	417.94	382.53	366.87	358.03	352.36	348.42	345.51	343.28	341.51	340.08
$ / N. MILE	(CALCULATED)	1.82	1.36	1.21	1.13	1.08	1.05	1.03	1.01	1.00	0.99
CENT/SEAT=N.MI.	(CALCULATED)	3.648	2.722	2.413	2.259	2.166	2.104	2.060	2.027	2.001	1.981
*** BLOCK TIME *** TB = (0.12504) + (0.00275) * RANGE											
BLOCK TIME	(ACTUAL=HRS)	0.34	0.55	0.76	0.98	1.19	1.41	1.62	1.83	2.05	2.25
BLOCK TIME	((CALCULATED=HRS)	0.34	0.55	0.76	0.98	1.19	1.40	1.62	1.83	2.04	2.26

AIRCRAFT 5111 DIRECT OPERATING COST

RANGE	(N. MILES)	56.30	112.60	168.90	225.20	281.50	337.80	394.10	450.40	506.70	563.00
*** ATA DIRECT OPERATING COST *** $ / TRIP = (85.573) + (1.077) * RANGE											
$ / TRIP	(ACTUAL)	142.76	206.09	268.43	329.98	390.90	451.31	511.31	570.97	630.35	689.50
$ / TRIP	(CALCULATED)	146.23	206.88	267.53	328.18	388.83	449.49	510.14	570.79	631.44	692.10
$ / HOUR	(CALCULATED)	522.53	471.61	447.76	433.93	424.90	418.54	413.82	410.17	407.28	404.92
$ / N. MILE	(CALCULATED)	2.60	1.84	1.58	1.46	1.38	1.33	1.29	1.27	1.25	1.23
CENT/SEAT=N.MI.	(CALCULATED)	5.194	3.675	3.168	2.915	2.763	2.661	2.589	2.535	2.492	2.459
*** ATA DOC LESS DEPRICIATION *** $ / TRIP = (69.236) + (0.928) * RANGE											
$ / TRIP	(ACTUAL)	121.03	173.66	226.15	278.54	330.84	383.07	435.25	487.38	539.47	591.53
$ / TRIP	(CALCULATED)	121.50	173.77	226.03	278.30	330.56	382.83	435.09	487.36	539.62	591.89
$ / HOUR	(CALCULATED)	434.18	396.13	378.30	367.97	361.22	356.47	352.94	350.22	348.05	346.29
$ / N. MILE	(CALCULATED)	2.16	1.54	1.34	1.24	1.17	1.13	1.10	1.08	1.06	1.05
CENT/SEAT=N.MI.	(CALCULATED)	4.316	3.086	2.677	2.472	2.349	2.267	2.208	2.164	2.130	2.103
*** BLOCK TIME *** TB = (0.12102) + (0.00282) * RANGE											
BLOCK TIME	(ACTUAL=HRS)	0.28	0.44	0.60	0.76	0.92	1.07	1.23	1.39	1.55	1.71
BLOCK TIME	((CALCULATED=HRS)	0.28	0.44	0.60	0.76	0.92	1.07	1.23	1.39	1.55	1.71

FOLDOUT FRAME 1

FOLDOUT FRAME 2

AIRCRAFT 5211 DIRECT OPERATING COST

RANGE	(N. MILES)	33.70	67.40	101.10	134.80	168.50	202.20	235.90	269.60	303.30	337.00
*** ATA DIRECT OPERATING COST ***											
$ / TRIP = (81.725) + (1.134) * RANGE											
$ / TRIP	(ACTUAL)	118.22	157.70	196.76	235.47	273.87	312.01	349.90	387.60	425.10	462.45
$ / TRIP	(CALCULATED)	119.94	158.16	196.37	234.59	272.80	311.02	349.23	387.45	425.66	463.88
$ / HOUR	(CALCULATED)	558.11	510.23	484.82	469.07	458.36	450.59	444.71	440.09	436.38	433.33
$ / N. MILE	(CALCULATED)	3.56	2.35	1.94	1.74	1.62	1.54	1.48	1.44	1.40	1.38
CENT/SEAT=N.MI.	(CALCULATED)	7.118	4.695	3.885	3.481	3.238	3.076	2.961	2.874	2.807	2.753
*** ATA DOC LESS DEPRICIATION ***											
$ / TRIP = (69.343) + (0.974) * RANGE											
$ / TRIP	(ACTUAL)	101.94	134.95	167.90	200.81	233.67	266.49	299.28	332.05	364.79	397.50
$ / TRIP	(CALCULATED)	102.18	135.01	167.85	200.69	233.52	266.36	299.19	332.03	364.86	397.70
$ / HOUR	(CALCULATED)	475.46	435.57	414.40	401.29	392.36	385.89	380.99	377.14	374.05	371.51
$ / N. MILE	(CALCULATED)	3.03	2.00	1.66	1.49	1.39	1.32	1.27	1.23	1.20	1.18
CENT/SEAT=N.MI.	(CALCULATED)	6.064	4.006	3.320	2.978	2.772	2.635	2.537	2.463	2.406	2.360
*** BLOCK TIME ***											
TB = (0.11984) + (0.00282) * RANGE											
BLOCK TIME	(ACTUAL=HRS)	0.21	0.31	0.41	0.50	0.60	0.69	0.79	0.88	0.98	1.07
BLOCK TIME	((CALCULATED=HRS)	0.21	0.31	0.41	0.50	0.60	0.69	0.79	0.88	0.98	1.07

AIRCRAFT 3011 DIRECT OPERATING COST

RANGE	(N. MILES)	56.60	113.20	169.80	226.40	283.00	339.60	396.20	452.80	509.40	566.00
*** ATA DIRECT OPERATING COST ***											
$ / TRIP = (71.233) + (0.985) * RANGE											
$ / TRIP	(ACTUAL)	124.12	182.12	239.27	295.76	351.73	407.29	462.50	517.45	572.17	626.71
$ / TRIP	(CALCULATED)	126.99	182.75	238.51	294.27	350.03	405.79	461.55	517.31	573.07	628.83
$ / HOUR	(CALCULATED)	447.47	404.26	384.49	373.16	365.81	360.66	356.85	353.92	351.60	349.70
$ / N. MILE	(CALCULATED)	2.24	1.61	1.40	1.30	1.24	1.19	1.16	1.14	1.12	1.11
CENT/SEAT=N.MI.	(CALCULATED)	7.479	5.381	4.682	4.333	4.123	3.983	3.883	3.808	3.750	3.703
*** ATA DOC LESS DEPRICIATION ***											
$ / TRIP = (58.555) + (0.866) * RANGE											
$ / TRIP	(ACTUAL)	107.16	156.45	205.64	254.73	303.75	352.71	401.63	450.51	499.36	548.19
$ / TRIP	(CALCULATED)	107.55	156.54	205.53	254.53	303.52	352.51	401.50	450.50	499.49	548.48
$ / HOUR	(CALCULATED)	378.96	346.28	331.33	322.76	317.20	313.31	310.43	308.21	306.45	305.02
$ / N. MILE	(CALCULATED)	1.90	1.38	1.21	1.12	1.07	1.04	1.01	0.99	0.98	0.97
CENT/SEAT=N.MI.	(CALCULATED)	6.334	4.610	4.035	3.747	3.575	3.460	3.378	3.316	3.268	3.230
*** BLOCK TIME ***											
TB = (0.11554) + (0.00297) * RANGE											
BLOCK TIME	(ACTUAL=HRS)	0.28	0.45	0.62	0.79	0.96	1.13	1.29	1.46	1.63	1.80
BLOCK TIME	((CALCULATED=HRS)	0.28	0.45	0.62	0.79	0.96	1.13	1.29	1.46	1.63	1.80

FOLDOUT FRAME

ORIGINAL PAGE IS
OF POOR QUALITY

FOLDOUT FRAME

AIRCRAFT 7011 DIRECT OPERATING COST

RANGE	(N. MILES)	56.20	112.40	168.60	224.80	281.00	337.20	393.40	449.60	505.80	562.00
*** ATA DIRECT OPERATING COST ***											
$ / TRIP = (100.740) + (1.193) * RANGE											
$ / TRIP	(ACTUAL)	163.64	233.83	302.86	370.95	438.30	505.04	571.28	637.11	702.61	767.82
$ / TRIP	(CALCULATED)	167.76	234.78	301.80	368.81	435.83	502.85	569.87	636.89	703.91	770.93
$ / HOUR	(CALCULATED)	594.98	537.13	509.59	493.48	482.91	475.44	469.88	465.58	462.16	459.37
$ / N. MILE	(CALCULATED)	2.99	2.09	1.79	1.64	1.55	1.49	1.45	1.42	1.39	1.37
CENT/SEAT-N.MI.	(CALCULATED)	4.264	2.984	2.557	2.344	2.216	2.130	2.069	2.024	1.988	1.960
*** ATA DOC LESS DEPRICIATION ***											
$ / TRIP = (80.376) + (1.012) * RANGE											
$ / TRIP	(ACTUAL)	136.71	194.04	251.21	308.26	365.20	422.06	478.85	535.59	592.28	648.93
$ / TRIP	(CALCULATED)	137.27	194.17	251.07	307.97	364.86	421.76	478.66	535.55	592.45	649.35
$ / HOUR	(CALCULATED)	486.86	444.23	423.93	412.06	404.27	398.77	394.67	391.80	388.98	386.93
$ / N. MILE	(CALCULATED)	2.44	1.73	1.49	1.37	1.30	1.25	1.22	1.19	1.17	1.16
CENT/SEAT-N.MI.	(CALCULATED)	3.489	2.468	2.127	1.957	1.855	1.787	1.738	1.702	1.673	1.651
*** BLOCK TIME ***											
TB = (0.12681) + (0.00276) * RANGE											
BLOCK TIME	(ACTUAL-HRS)	0.28	0.44	0.59	0.75	0.90	1.06	1.21	1.37	1.52	1.68
BLOCK TIME	((CALCULATED-HRS)	0.28	0.44	0.59	0.75	0.90	1.06	1.21	1.37	1.52	1.68

AIRCRAFT 5411 DIRECT OPERATING COST

RANGE	(N. MILES)	56.40	112.80	169.20	225.60	282.00	338.40	394.80	451.20	507.60	564.00
*** ATA DIRECT OPERATING COST ***											
$ / TRIP = (89.806) + (1.168) * RANGE											
$ / TRIP	(ACTUAL)	151.86	220.71	288.44	355.30	421.46	487.06	552.21	617.01	681.50	745.75
$ / TRIP	(CALCULATED)	155.68	221.56	287.44	353.31	419.19	485.07	550.94	616.82	682.70	748.58
$ / HOUR	(CALCULATED)	535.69	483.45	459.19	445.19	436.07	429.65	424.90	421.24	418.32	415.96
$ / N. MILE	(CALCULATED)	2.76	1.96	1.70	1.57	1.49	1.43	1.40	1.37	1.34	1.33
CENT/SEAT-N.MI.	(CALCULATED)	5.521	3.928	3.398	3.132	2.973	2.867	2.791	2.734	2.690	2.655
*** ATA DOC LESS DEPRICIATION ***											
$ / TRIP = (72.178) + (1.007) * RANGE											
$ / TRIP	(ACTUAL)	128.43	185.62	242.65	299.56	356.37	413.11	469.79	526.42	583.01	639.57
$ / TRIP	(CALCULATED)	128.95	185.73	242.51	299.29	356.06	412.84	469.62	526.40	583.17	639.95
$ / HOUR	(CALCULATED)	443.72	405.27	387.42	377.11	370.40	365.68	362.18	359.48	357.34	355.60
$ / N. MILE	(CALCULATED)	2.29	1.65	1.43	1.33	1.26	1.22	1.19	1.17	1.15	1.13
CENT/SEAT-N.MI.	(CALCULATED)	4.573	3.293	2.867	2.653	2.525	2.440	2.379	2.333	2.298	2.269
*** BLOCK TIME ***											
TB = (0.12295) + (0.00297) * RANGE											
BLOCK TIME	(ACTUAL-HRS)	0.29	0.46	0.63	0.79	0.96	1.13	1.30	1.46	1.63	1.80
BLOCK TIME	((CALCULATED-HRS)	0.29	0.46	0.63	0.79	0.96	1.13	1.30	1.46	1.63	1.80

FOLDOUT FRAME)

FOLDOUT FRAME 2

AIRCRAFT 5611 DIRECT OPERATING COST

RANGE (N. MILES)		56.50	113.00	169.50	224.00	282.50	339.00	395.50	452.00	508.50	565.00
*** ATA DIRECT OPERATING COST ***											
$ / TRIP = (84.536) + (1.038) * RANGE											
$ / TRIP	(ACTUAL)	139.85	201.04	261.29	320.79	379.69	438.10	496.11	553.79	611.19	668.37
$ / TRIP	(CALCULATED)	143.17	201.80	260.44	319.07	377.70	436.34	494.97	553.60	612.24	670.87
$ / HOUR	(CALCULATED)	522.49	471.74	447.82	435.91	424.81	418.40	413.63	409.95	407.02	404.63
$ / N. MILE	(CALCULATED)	2.53	1.79	1.54	1.41	1.34	1.29	1.25	1.22	1.20	1.19
CENT/SEAT-N.MI.	(CALCULATED)	5.068	3.572	3.073	2.824	2.674	2.574	2.503	2.450	2.408	2.375
*** ATA DOC LESS DEPRICIATION ***											
$ / TRIP = (68.620) + (0.894) * RANGE											
$ / TRIP	(ACTUAL)	118.67	169.52	220.24	270.86	321.40	371.87	422.29	472.66	522.99	573.29
$ / TRIP	(CALCULATED)	119.12	169.62	220.12	270.63	321.13	371.63	422.13	472.63	523.13	573.63
$ / HOUR	(CALCULATED)	434.72	396.51	378.51	368.03	361.18	356.35	352.76	349.99	347.78	345.99
$ / N. MILE	(CALCULATED)	2.11	1.50	1.30	1.20	1.14	1.10	1.07	1.05	1.03	1.02
CENT/SEAT-N.MI.	(CALCULATED)	4.217	3.002	2.597	2.395	2.273	2.192	2.135	2.091	2.058	2.031
*** BLOCK TIME ***											
TB = (0.12024) + (0.00272) * RANGE											
BLOCK TIME	(ACTUAL-HRS)	0.27	0.43	0.58	0.74	0.89	1.04	1.20	1.35	1.50	1.66
BLOCK TIME	((CALCULATED-HRS)	0.27	0.43	0.58	0.74	0.89	1.04	1.20	1.35	1.50	1.66

FOLDOUT FRAME 1

FOLDOUT FRAME 2

11/14/74 9.16.07

TABLE B-11
FINAL DESIGN BASEPOINT AND DERIVATIVE AIRCRAFT CHARACTERISTICS

PRODUCT ID		3212	4212	5212	6212	7212
INTRODUCTION DATE		1980	1980	1980	1980	1980
CRUISE MACH NUMBER		0.750	0.750	0.750	0.750	0.750
DESIGN RANGE	(N.MI)	850.	850.	850.	850.	850.
DESIGN PAYLOAD	(NO. SEATS)	30.	40.	50.	60.	70.
INITIAL CRUISE ALTITUDE	(FT)	0.	0.	0.	0.	0.
TAKE-OFF FIELD LENGTH	(FT)	0.	0.		0.	0.
LANDING FIELD LENGTH	(FT)	0.	0.		0.	0.
NO. OF ENGINES		2.	2.	2.	2.	2.
ENGINE TYPE		HIBYPASS	HIBYPASS	HIBYPASS	HIBYPASS	HIBYPASS
OPERATING PURPOSE		DOMESTIC	DOMESTIC	DOMESTIC	DOMESTIC	DOMESTIC
NO. OF FLIGHT CREW		2.	2.	2.	2.	2.
BREAK-POINT CAPACITY	(SEATS)	0.	0.		0.	0.
BREAK-POINT RANGE	(N.MI)	0.	0.		0.	0.
RANGE AT ZERO PAYLOAD	(N.MI)	0.	0.		0.	0.
GROSS WEIGHT	(LBS)	34370.	40597.	46850.	53560.	60306.
LANDING WEIGHT	(LBS)	29003.	34533.	40090.	46104.	52147.
ZERO FUEL WEIGHT	(LBS)	27125.	32429.	37760.	43508.	49283.
OPERATOR WEIGHT EMPTY	(LBS)	21125.	24429.	27760.	31508.	35283.
MANUFACTURER WEIGHT EMPTY	(LBS)	20147.	23429.	26685.	30314.	33943.
AIRFRAME WEIGHT	(LBS)	17687.	20514.	23315.	0.	29589.
CAPACITY FUEL	(LBS)	0.	0.	0.	0.	0.
WING AREA	(SQ.FT)	339.	402.	464.	532.	600.
TAKE-OFF THRUST PER ENGINE	(LB)	6402.	7586.	8770.	10050.	11531.
FUEL CONSUMPTION	(LBS/HR)	2333.	2633.	2932.	3229.	3529.
PRODUCTION RATE PER MONTH		0.	0.	8.	0.	0.
BREAK EVEN UNIT		0.	0.	400.	0.	0.
NEW DEVELOPMENT FACTOR		1.00	1.00	1.00	1.00	1.00
PRICE TO COST RATIO		0.0	0.0	1.0000	0.0	0.0
DEVELOPMENT COST	($ MILLION)	80.873	94.786	122.042	122.614	136.527
UNIT PRICE	($ MILLION)	2.372	2.726	3.077	3.585	3.788
ENGINES PRICE	($ MILLION)	0.532	0.606	0.682	0.762	0.842
OPERATIONAL LOAD FACTR		0.0	0.0	0.500	0.0	0.0
ANNUAL UTILIZATION	(HRS)	2945.	2945.	2946.	2947.	2948.
DOLLARS PER FLIGHT		834.72	896.74	958.60	959.94	1086.01
DOLLARS PER N.MILE		0.98	1.05	1.13	1.13	1.28
CENTS PER SEAT-N.MILE		3.273	2.637	2.256	1.882	1.825
BLOCK TIME	(HRS)	2.300	2.303	2.306	2.309	2.312

FOLDOUT FRAME 1

FOLDOUT FRAME 2

TABLE B-12
DIRECT OPERATING COSTS OF BASEPOINT AND DERIVATIVE AIRCRAFT

11/14/74 9.16.07

AIRCRAFT 3212 DIRECT OPERATING COST

RANGE	(N. MILES)	85,00	170,00	255,00	340,00	425,00	510,00	595,00	680,00	765,00	850,00
*** ATA DIRECT OPERATING COST ***											
$ / TRIP = (73,690) + (0,895) * RANGE											
$ / TRIP	(ACTUAL)	145,52	224,30	302,42	379,92	456,84	533,21	609,07	684,45	759,39	827,45
$ / TRIP	(CALCULATED)	149,79	225,90	302,00	378,10	454,20	530,31	606,41	682,51	758,62	834,72
$ / HOUR	(CALCULATED)	442,68	406,04	390,03	381,05	375,30	371,31	368,38	366,13	364,35	362,91
$ / N, MILE	(CALCULATED)	1,76	1,33	1,18	1,11	1,07	1,04	1,02	1,00	0,99	0,98
CENT/SEAT=N,MI,	(CALCULATED)	5,874	4,429	3,948	3,707	3,562	3,466	3,397	3,346	3,306	3,273
*** ATA DOC LESS DEPRICIATION ***											
$ / TRIP = (60,642) + (0,770) * RANGE											
$ / TRIP	(ACTUAL)	124,77	190,81	256,75	322,62	388,40	454,11	519,74	585,32	650,83	710,61
$ / TRIP	(CALCULATED)	126,05	191,46	256,87	322,28	387,69	453,10	518,51	583,92	649,33	714,74
$ / HOUR	(CALCULATED)	372,52	344,14	331,74	324,79	320,34	317,25	314,98	313,24	311,86	310,75
$ / N, MILE	(CALCULATED)	1,48	1,13	1,01	0,95	0,91	0,89	0,87	0,86	0,85	0,84
CENT/SEAT=N,MI,	(CALCULATED)	4,943	3,754	3,358	3,160	3,041	2,961	2,905	2,862	2,829	2,803
*** BLOCK TIME ***											
TB = (0,12041) + (0,00256) * RANGE											
BLOCK TIME	(ACTUAL=HRS)	0,34	0,55	0,77	0,99	1,21	1,43	1,65	1,87	2,09	2,29
BLOCK TIME	((CALCULATED=HRS)	0,34	0,56	0,77	0,99	1,21	1,43	1,65	1,86	2,08	2,30

AIRCRAFT 4212 DIRECT OPERATING COST

RANGE	(N. MILES)	85,00	170,00	255,00	340,00	425,00	510,00	595,00	680,00	765,00	850,00
*** ATA DIRECT OPERATING COST ***											
$ / TRIP = (81,140) + (0,960) * RANGE											
$ / TRIP	(ACTUAL)	157,86	242,48	326,32	409,46	491,93	573,77	655,02	735,73	815,92	888,72
$ / TRIP	(CALCULATED)	162,70	244,26	325,82	407,38	488,94	570,50	652,06	733,62	815,18	896,74
$ / HOUR	(CALCULATED)	476,76	436,78	419,23	409,36	403,04	398,65	395,42	392,94	390,98	389,39
$ / N, MILE	(CALCULATED)	1,91	1,44	1,28	1,20	1,15	1,12	1,10	1,08	1,07	1,05
CENT/SEAT=N,MI,	(CALCULATED)	4,785	3,592	3,194	2,995	2,876	2,797	2,740	2,697	2,664	2,637
*** ATA DOC LESS DEPRICIATION ***											
$ / TRIP = (65,942) + (0,815) * RANGE											
$ / TRIP	(ACTUAL)	133,82	203,79	273,66	343,43	413,11	482,70	552,21	621,65	691,02	754,31
$ / TRIP	(CALCULATED)	135,22	204,50	273,78	343,05	412,33	481,61	550,89	620,16	689,44	758,72
$ / HOUR	(CALCULATED)	396,23	365,68	352,26	344,72	339,89	336,53	334,06	332,17	330,67	329,46
$ / N, MILE	(CALCULATED)	1,59	1,20	1,07	1,01	0,97	0,94	0,93	0,91	0,90	0,89
CENT/SEAT=N,MI,	(CALCULATED)	3,977	3,007	2,684	2,522	2,425	2,361	2,315	2,280	2,253	2,232
*** BLOCK TIME ***											
TB = (0,12340) + (0,00256) * RANGE											
BLOCK TIME	(ACTUAL=HRS)	0,34	0,56	0,78	1,00	1,21	1,43	1,65	1,87	2,09	2,29
BLOCK TIME	((CALCULATED=HRS)	0,34	0,56	0,78	1,00	1,21	1,43	1,65	1,87	2,08	2,30

AIRCRAFT 5212 DIRECT OPERATING COST

RANGE	(N. MILES)	85.00	170.00	255.00	340.00	425.00	510.00	595.00	680.00	765.00	850.00
					*** ATA DIRECT OPERATING COST ***						
					$ / TRIP = (88.660) + (1.023) * RANGE						
$ / TRIP	(ACTUAL)	170.26	260.68	350.23	438.97	526.97	614.26	700.88	786.89	872.31	949.84
$ / TRIP	(CALCULATED)	175.65	262.65	349.64	436.64	523.63	610.63	697.62	784.62	871.61	958.60
$ / HOUR	(CALCULATED)	510.43	467.27	448.23	437.50	430.62	425.83	422.31	419.61	417.47	415.73
$ / N. MILE	(CALCULATED)	2.07	1.54	1.37	1.28	1.23	1.20	1.17	1.15	1.14	1.13
CENT/SEAT-N.MI.	(CALCULATED)	4.133	3.090	2.742	2.568	2.464	2.395	2.345	2.308	2.279	2.256
					*** ATA DOC LESS DEPRICIATION ***						
					$ / TRIP = (71.279) + (0.860) * RANGE						
$ / TRIP	(ACTUAL)	142.91	216.80	290.58	364.25	437.82	511.29	584.67	657.96	731.18	797.98
$ / TRIP	(CALCULATED)	144.42	217.56	290.70	363.83	436.97	510.11	583.25	656.39	729.83	802.67
$ / HOUR	(CALCULATED)	419.66	387.05	372.66	364.55	359.36	355.74	353.07	351.03	349.42	348.11
$ / N. MILE	(CALCULATED)	1.70	1.28	1.14	1.07	1.03	1.00	0.98	0.97	0.95	0.94
CENT/SEAT-N.MI.	(CALCULATED)	3.398	2.559	2.280	2.140	2.056	2.000	1.961	1.931	1.907	1.889
					*** BLOCK TIME ***						
					TB = (0.12616) + (0.00256) * RANGE						
BLOCK TIME	(ACTUAL-HRS)	0.34	0.56	0.78	1.00	1.22	1.44	1.66	1.87	2.09	2.29
BLOCK TIME	((CALCULATED-HRS)	0.34	0.56	0.78	1.00	1.22	1.43	1.65	1.87	2.09	2.31

AIRCRAFT 6212 DIRECT OPERATING COST

RANGE	(N. MILES)	85.00	170.00	255.00	340.00	425.00	510.00	595.00	680.00	765.00	850.00
					*** ATA DIRECT OPERATING COST ***						
					$ / TRIP = (91.923) + (1.021) * RANGE						
$ / TRIP	(ACTUAL)	172.63	263.34	353.05	441.83	529.72	616.80	703.11	788.69	873.59	950.57
$ / TRIP	(CALCULATED)	178.72	265.53	352.33	439.13	525.93	612.73	699.53	786.34	873.14	959.94
$ / HOUR	(CALCULATED)	514.81	469.85	449.92	438.67	431.44	426.40	422.69	419.85	417.59	415.77
$ / N. MILE	(CALCULATED)	2.10	1.56	1.38	1.29	1.24	1.20	1.18	1.16	1.14	1.13
CENT/SEAT-N.MI.	(CALCULATED)	3.504	2.603	2.303	2.153	2.062	2.002	1.959	1.927	1.902	1.882
					*** ATA DOC LESS DEPRICIATION ***						
					$ / TRIP = (71.395) + (0.831) * RANGE						
$ / TRIP	(ACTUAL)	140.49	211.97	283.31	354.53	425.62	496.61	567.49	638.27	708.96	773.44
$ / TRIP	(CALCULATED)	142.06	212.73	283.40	354.07	424.73	495.40	566.07	636.74	707.41	778.07
$ / HOUR	(CALCULATED)	409.21	376.43	361.90	353.69	348.42	344.75	342.05	339.97	338.33	337.00
$ / N. MILE	(CALCULATED)	1.67	1.25	1.11	1.04	1.00	0.97	0.95	0.94	0.92	0.92
CENT/SEAT-N.MI.	(CALCULATED)	2.786	2.086	1.852	1.736	1.666	1.619	1.586	1.561	1.541	1.526
					*** BLOCK TIME ***						
					TB = (0.12920) + (0.00256) * RANGE						
BLOCK TIME	(ACTUAL-HRS)	0.34	0.56	0.78	1.00	1.22	1.44	1.66	1.88	2.10	2.30
BLOCK TIME	((CALCULATED-HRS)	0.35	0.57	0.78	1.00	1.22	1.44	1.65	1.87	2.09	2.31

FOLDOUT FRAME 1

FOLDOUT FRAME 2

AIRCRAFT 7212 DIRECT OPERATING COST

RANGE (N. MILES)		85.00	170.00	255.00	340.00	425.00	510.00	595.00	680.00	765.00	850.00
*** ATA DIRECT OPERATING COST ***											
$ / TRIP = (104.491) + (1.155) * RANGE											
$ / TRIP	(ACTUAL)	196.13	298.44	399.69	499.96	599.30	697.77	795.43	892.33	988.51	1075.75
$ / TRIP	(CALCULATED)	202.64	300.79	398.95	497.10	595.25	693.40	791.56	889.71	987.86	1086.01
$ / HOUR	(CALCULATED)	578.69	529.44	507.50	495.09	487.10	481.53	477.43	474.28	471.78	469.76
$ / N. MILE	(CALCULATED)	2.38	1.77	1.56	1.46	1.40	1.36	1.33	1.31	1.29	1.28
CENT/SEAT-N.MI.	(CALCULATED)	3.406	2.528	2.235	2.089	2.001	1.942	1.900	1.869	1.845	1.825
*** ATA DOC LESS DEPRICIATION ***											
$ / TRIP = (82.505) + (0.954) * RANGE											
$ / TRIP	(ACTUAL)	161.88	243.88	325.74	407.46	489.06	570.54	651.92	733.18	814.35	888.40
$ / TRIP	(CALCULATED)	163.62	244.74	325.85	406.97	488.08	569.20	650.31	731.43	812.54	893.66
$ / HOUR	(CALCULATED)	467.25	430.77	414.51	405.32	399.40	395.28	392.24	389.90	388.06	386.56
$ / N. MILE	(CALCULATED)	1.92	1.44	1.28	1.20	1.15	1.12	1.09	1.08	1.06	1.05
CENT/SEAT-N.MI.	(CALCULATED)	2.750	2.057	1.825	1.710	1.641	1.594	1.561	1.537	1.517	1.502
*** BLOCK TIME ***											
TB = (0.13221) + (0.00256) * RANGE											
BLOCK TIME	(ACTUAL-HRS)	0.35	0.57	0.79	1.00	1.22	1.44	1.66	1.88	2.10	2.30
BLOCK TIME	((CALCULATED-HRS)	0.35	0.57	0.79	1.00	1.22	1.44	1.66	1.88	2.09	2.31

B.5 NONCOMPETITIVE OPERATIONAL SIMULATION WITH CONCEPTUAL AIRCRAFT

Table B -13 is a sample of printout from the computerized operational simulation model. This model was used to evaluate performance of all of the initial parametric and conceptual variations of the initial aircraft. Shown in the table are the 1980 Annual Traffic Statistics divided into the six regions. These are labeled in the first part of the table as Service Class. The minimum trip per day is the 1972 schedule used as a base in this part of the study. Other pertinent data are Passengers (demand for seats per route), RPM, R-Bar (the average stage length in each traffic region) and minimum trips in millions, which is the annual total in the mission model.

The 1980 fleet characteristics are shown in the next two lines of data. These data are output from the simulation program. There is some overlap in data which is of no consequence in the analysis, i.e., Number of Units, Revenue Passenger Miles, and Average Range.

TABLE B-13

MISSION MODEL DEMAND AND FLEET STATISTICS

06/06/74 20.43.27 BD 119, RR 50, CS 0, PC 2,

1980 ANNUAL TRAFFIC STATISTICS

SERVICE CLASS TRIPS/DAY MIN	MAX	PASSENGERS (MILL)	SEATS (MILL)	TRIPS (MILL)	RPM (BIL)	SEAT-MILES (BILL)	TRIP-MILES (BILL)	PAX / TRIP	SEAT/ TRIP	R-BAR SEATS	R-BAR TRIPS (STATUTE MILES)	AIRPORT PAIRS	MIN. TRIPS (MILL)
1.4 -	61.4	30.417	62.075	6.512	5.622	11.474	1.037	5.4	11.1	185.	159.	902.	0.651
0.7 -	68.5	18.994	38.371	3.875	2.945	5.950	0.532	5.5	11.2	155.	137.	615.	0.387
9.0 -	43.6	9.508	17.899	2.007	1.697	3.048	0.334	5.7	10.9	204.	167.	345.	0.201
1.4 -	23.6	9.026	16.882	1.675	1.859	3.889	0.302	6.2	12.9	206.	180.	322.	0.168
8.6 -	29.3	11.475	23.418	2.613	1.911	3.901	0.395	4.8	4.9	167.	151.	453.	0.261
4.9 -	25.0	5.818	8.556	0.482	1.334	1.962	0.108	12.4	18.2	229.	223.	111.	0.048
TOTAL													
4.9 -	61.4	65.036	169.201	17.162	15.368	30.822	2.794	5.7	11.4	182.	158.	2724.	1.716

06/06/74 20.43.27 BD 119, RR 50, CS 0, PC 2, PAGE 14

1980

MAXIMUM PROFIT FLEET CHARACTERISTICS SUMMARY

ID	TRIPS (MIL)	TRIP-MILES (MILL)	REVENUE PDGRS	BLOCK SPEED (MPH)	NO.OF UNITS	UTILIZATION (HRS/AC/YR)	FUEL MIL-TONS	REVENUE PAX-MILES	SEAT-MILES (BILL)	LOAD FACTOR	AVE RANGE	PRODUCTIVITY RPM/AC MIL
5111	3.414	592.2	1864462.0	317.8	656.	2642.	2.656	14.697	29.624	0.496	175.	22.40
TOTAL	3.414	592.2	1,864,462.0	317.8	656.	2642.	2.656	14.697	29.624	0.496	175.	22.40

SUMMARY REPORT BASED ON MAXIMUM PROFIT

CANDIDATE TRANSPORT	TRANSPORT UNITS	FLEET PCNT	FLEET $MIL,PCNT	PRICE	ANNUAL REVENUE $MIL,PCNT		ANNUAL PROFIT $MIL,PCNT		RETURN ON INVEST	PASSENGER-MILES MIL ,PCNT		PASSENGERS THN'D,PCNT		RANGE BAR
5111	656.10	100.0	2050.607	100.0	2090.628	100.0	31.766	100.0	1.55	14697.	100.0	83891.	100.0	175.
TOTAL	656.10	100.0	2050.607	100.0	2090.628	100.0	31.766	100.0	1.55	14697.	100.0	83891.	100.0	

B.6 COMPETITIVE OPERATIONAL SIMULATION

The competitive evaluation of contemporary and medium density derivative aircraft was conducted with a revised network and mission model. Data representative of this analysis are shown in the following three tables for 1980, 1985, and 1990. Table B-14 lists the 1980 traffic statistics from the mission model and summaries of fleet statistics. The mission model has two parts or service classes. Service Class 1 is that major portion of the model which has growth rates associated with the RPM demanded. Service Class 2 is the zero growth network equivalent to commuter or low density traffic. The fleet composition which provides the requisite trips and RPM is shown in the next two series of data. The aircraft ID identifies the aircraft and the performance it generates. The aircraft are identified as follows:

3212	30 seat Basepoint Derivative
4212	40 seat Basepoint Derivative
5212	50 seat Basepoint
6212	60 seat Basepoint Derivative
9016	B737/DC-9 type

Detailed and summary fleet statistics are listed for the fleet and each aircraft.

Tables B-15 and B-16 are the same as the table for 1980, but show fleet data for 1985 and 1990 respectively.

TABLE B-14

1980 MISSION MODEL DEMAND AND FLEET STATISTICS

12/17/74 13.16.55

1980 ANNUAL TRAFFIC STATISTICS

SERVICE CLASS	PASSENGERS (MILL)	SEATS (MILL)	TRIPS (MILL)	RPM (BIL)	SEAT-MILES (BILL)	TRIP-MILES (BILL)	PAX / TRIP	SEAT/ TRIP	R-BAR SEATS (STATUTE	R-BAR TRIPS MILES)	LOAD FACTOR	MIN. TRIPS (MILL)
1	70.474	134.236	22.614	12.997	24.755	0.250	52.0	99.0	184.	157.	52.50	1.594
2	3.535	5.894	3.439	0.310	0.517	0.031	10.2	16.9	88.	89.	59.98	0.344
TOTAL 2	74.009	140.130	26.054	13.307	25.272	0.281	47.4	90.1	180.	145.	52.65	1.938

1980

MAXIMUM PROFIT FLEET CHARACTERISTICS SUMMARY

ID	TRIPS (MIL)	TRIP-MILES (MILL)	REVENUE HOURS	BLOCK SPEED (MPH)	NO.OF UNITS	UTILIZATION (HRS/AC/YR)	FUEL MIL-TONS	REVENUE PAX-MILES	SEAT-MILES (BILL)	LOAD FACTOR	AVE RANGE	PRODUCTIVITY RPM/AC MIL
3212	0.579	49.7	180221.5	275.9	91.	1978.	0.210	0.544	1.492	0.365	85.	5.97
4212	0.030	2.5	9329.6	271.3	5.	1995.	0.012	0.049	0.101	0.484	84.	10.48
6212	0.233	24.7	84984.7	290.4	42.	2008.	0.137	0.738	1.481	0.498	106.	17.43
9016	1.310	252.6	797246.3	316.9	299.	2666.	2.471	11.976	25.265	0.474	200.	40.05
TOTAL	2.152	329.6	1071782.0	307.5	437.	2452.	2.831	13.307	28.339	0.470	180.	30.44

SUMMARY REPORT BASED ON MAXIMUM PROFIT

CANDIDATE TRANSPORT	TRANSPORT UNITS	FLEET PCNT	FLEET $MIL,PCNT	PRICE	ANNUAL REVENUE $MIL,PCNT		ANNUAL PROFIT $MIL,PCNT		RETURN ON INVEST	PASSENGER-MILES MIL ,PCNT		PASSENGERS THNUD,PCNT		RANGE BAR
3212	91.12	20.8	216.143	10.8	95.122	6.2	-41.339	-36.2	-19.13	544.	4.1	6432.	8.7	85.
4212	4.68	1.1	12.750	0.6	8.588	0.6	-0.940	-0.8	-7.37	49.	0.4	582.	0.8	84.
6212	42.33	9.7	151.755	7.6	113.487	7.4	4.515	4.0	2.98	738.	5.5	6969.	9.4	106.
9016	299.00	68.4	1614.600	80.9	1315.707	85.8	151.855	133.1	9.41	11976.	90.0	60026.	81.1	200.
TOTAL	437.13	100.0	1995.248	100.0	1532.903	100.0	114.091	100.0	5.72	13307.	100.0	74009.	100.0	

FOLDOUT FRAME 1

FOLDOUT FRAME 2

TABLE B-15

1985 MISSION MODEL DEMAND AND FLEET STATISTICS

12/17/74 13.16.55

1985 ANNUAL TRAFFIC STATISTICS

SERVICE CLASS	PASSENGERS (MILL)	SEATS (MILL)	TRIPS (MILL)	RPM (BIL)	SEAT-MILES (BILL)	TRIP-MILES (BILL)	PAX / TRIP	SEAT/ TRIP	R-BAR SEATS (STATUTE	R-BAR TRIPS MILES)	LOAD FACTOR	MIN. TRIPS (MILL)
1	89.944	171.323	28.862	16.587	31.595	0.250	66.3	126.4	184.	157.	52.50	1.594
2	3.535	5.894	3.439	0.310	0.517	0.031	10.2	16.9	88.	89.	59.98	0.344
TOTAL 2	93.479	177.216	32.302	16.897	32.112	0.281	60.2	114.4	181.	145.	52.62	1.938

1985

MAXIMUM PROFIT FLEET CHARACTERISTICS SUMMARY

ID	TRIPS (MIL)	TRIP-MILES (MILL)	REVENUE HOURS	BLOCK SPEED (MPH)	NO. OF UNITS	UTILIZATION (HRS/AC/YR)	FUEL MIL-TONS	REVENUE PAX-MILES	SEAT-MILES (BILL)	LOAD FACTOR	AVE RANGE	PRODUCTIVITY RPM/AC MIL
3212	0.463	41.9	148840.4	281.2	75.	1986.	0.174	0.471	1.256	0.375	90.	6.28
4212	0.115	7.9	31800.1	248.4	16.	1943.	0.042	0.138	0.316	0.436	69.	8.42
5212	0.030	2.5	9415.5	268.8	5.	1996.	0.014	0.063	0.127	0.494	84.	13.26
9016	1.779	332.0	1059269.0	313.5	404.	2622.	3.284	16.226	33.204	0.489	190.	40.16
TOTAL	2.388	384.3	1249325.0	307.6	500.	2498.	3.513	16.897	34.902	0.484	181.	33.79

SUMMARY REPORT BASED ON MAXIMUM PROFIT

CANDIDATE TRANSPORT	TRANSPORT UNITS	FLEET PCNT	FLEET $MIL,	PCNT	ANNUAL REVENUE $MIL,	PCNT	ANNUAL PROFIT $MIL,	PCNT	RETURN ON INVEST	PASSENGER-MILES MIL ,	PCNT	PASSENGERS THN*D,	PCNT	RANGE BAR
3212	74.95	15.0	177.793	7.4	79.313	4.1	-33.365	-17.1	-18.77	471.	2.8	5227.	5.6	90.
4212	16.37	3.3	44.617	1.8	27.428	1.4	-4.436	-2.3	-9.94	138.	0.8	2006.	2.1	69.
5212	4.72	0.9	14.515	0.6	10.961	0.6	-0.308	-0.2	-2.12	63.	0.4	742.	0.8	84.
9016	404.00	80.8	2181.600	90.2	1824.044	93.9	233.649	119.5	10.71	16226.	96.0	85503.	91.5	190.
TOTAL	500.04	100.0	2418.524	100.0	1941.746	100.0	195.540	100.0	8.09	16897.	100.0	93478.	100.0	

FOLDOUT FRAME 1

FOLDOUT FRAME 2

TABLE B-16

1990 MISSION MODEL DEMAND AND FLEET STATISTICS

12/17/74 13.16.55

1990 ANNUAL TRAFFIC STATISTICS

SERVICE CLASS	PASSENGERS (MILL)	SEATS (MILL)	TRIPS (MILL)	RPM (BIL)	SEAT-MILES (BILL)	TRIP-MILES (BILL)	PAX / TRIP	SEAT/ TRIP	R-BAR SEATS (STATUTE	R-BAR TRIPS MILES)	LOAD FACTOR	MIN. TRIPS (MILL)
1	112.618	214.510	36.138	20.768	39.559	0.250	83.1	158.2	184.	157.	52.50	1.594
2	3.535	5.894	3.439	0.310	0.517	0.031	10.2	16.9	88.	89.	59.98	0.344
TOTAL 2	116.152	220.404	39.577	21.079	40.076	0.281	75.1	142.8	182.	145.	52.60	1.938

1990

MAXIMUM PROFIT FLEET CHARACTERISTICS SUMMARY

ID	TRIPS (MIL)	TRIP-MILES (MILL)	REVENUE HOURS	BLOCK SPEED (MPH)	NO.OF UNITS	UTILIZATION (HRS/AC/YR)	FUEL MIL-TONS	REVENUE PAX-MILES	SEAT-MILES (BILL)	LOAD FACTOR	AVE RANGE	PRODUCTIVITY RPM/AC MIL
3212	0.345	30.6	109618.9	279.3	55.	1985.	0.128	0.310	0.919	0.338	88.	5.62
4212	0.150	12.2	45568.2	267.5	23.	1974.	0.060	0.221	0.488	0.453	80.	9.56
5212	0.086	7.0	26312.3	265.1	13.	1959.	0.039	0.153	0.349	0.438	81.	11.38
6212	0.031	2.6	9805.2	266.2	5.	1997.	0.016	0.078	0.157	0.500	84.	15.95
9016	2.147	406.9	1291472.0	315.1	521.	2479.	4.004	20.317	40.691	0.499	190.	39.00
TOTAL	2.758	459.3	1482776.0	309.8	618.	2401.	4.246	21.079	42.603	0.495	181.	34.13

SUMMARY REPORT BASED ON MAXIMUM PROFIT

CANDIDATE TRANSPORT	TRANSPORT UNITS	FLEET PCNT	FLEET $MIL,	PCNT	PRICE PCNT	ANNUAL REVENUE $MIL,	PCNT	ANNUAL PROFIT $MIL,	PCNT	RETURN ON INVEST	PASSENGER-MILES MIL ,	PCNT	PASSENGERS THNTD,	PCNT	RANGE BAR
3212	55.22	8.9	130.987	4.3	53.063	2.2	-26.938	-9.8	-20.57	310.	1.5	3535.	3.0	88.
4212	23.08	3.7	62.928	2.1	39.845	1.6	-5.582	-2.0	-8.87	221.	1.0	2751.	2.4	80.
5212	13.43	2.2	41.331	1.3	27.364	1.1	-2.298	-0.8	-5.56	153.	0.7	1879.	1.6	81.
6212	4.91	0.8	17.599	0.6	13.724	0.6	0.624	0.2	3.54	78.	0.4	929.	0.8	84.
9016	521.00	84.4	2813.400	91.8	2283.858	94.5	310.041	112.4	11.02	20317.	96.4	107057.	92.2	190.
TOTAL	617.65	100.0	3066.244	100.0	2417.854	100.0	275.846	100.0	9.00	21079.	100.0	116151.	100.0	

FOLDOUT FRAME

ORIGINAL PAGE IS
OF POOR QUALITY

FOLDOUT FRAME

B-7 REGIONAL AIRPORT SURVEY

The Reuben H. Donnelly Corporation provides Official Airlines Guide (OAG) data on airline scheduled service. Table B-17 show a portion of data sheets generated by a machine processing and sorting routine applied to an August 1973 OAG data tape. The sheets included are sample sheets of a total survey of world airlines and airports. Only those sheets are shown which include regional carriers contained in the initial network used in the parametric and conceptual aircraft analysis. These airlines are identified as:

XK - Air California

AL - Allegheny Airlines

FL - Frontier Airlines

RW - Hughes Air West

NC - North Central Airlines

OZ - Ozark Airlines

PS - Pacific Southwest Airlines

PI - Piedmont Aviation

SO - Southern Airways

TT - Texas International Airlines

Table B-18 contains the regional airline airports for which detailed statistical data were available for the year 1972. These data were from Federal Aviation Administration (FAA) sources.

Table B-19 presents data on runway lengths of length corrected for altitude and hot days. The correction is based on a simple FAA correction method which accounts for degradation in field length performance by an

average commercial jet aircraft. The correction accounts for altitude above sea level and for the highest temperature above 59°F expected to occur with a prediction reliability of 85 percent.

Runway Length Correction

The corrected runway lengths were computed by dividing the actual length by the product of the elevation correction factor, gradient correction factor, and temperature correction factor.

a. Elevation Correction Factor

$$F_e = (0.07 \times E + 1)$$

Where E = Airport elevation in thousands of feet

b. Temperature Correction Factor

$$F_t = 0.005 \ [T - (59 - 3.566E)] + 1$$

Where T = Normal maximum temperature in degrees Fahrenheit

c. Gradient Correction Factor

$$F_g = (0.1 \times G + 1)$$

Where G = % Effective Gradient

$$\text{Corrected Runway Length} = \frac{\text{Runway Length}}{F_e \times F_t \times F_g}$$

TABLE B-17

AIRLINES SERVING THE WORLDS AIRPORTS
LISTED ALPHABETICALLY BY AIRLINE NAME
OAG AUGUST 1973

28	IY	AIR CALEDONIE			
	1	THO TOUHO, NEW CALEDONIA			
29	XK	AIR CALIFORNIA-INTRA-STATE			
	1	OAK OAKLAND, CALIF., USA	2	ONT ONTARIO, CALIF., USA	
	3	PSP PALM SPRINGS, CALIF., USA	4	SMF SACRAMENTO, CALIF., USA	
	5	SAN SAN DIEGO, CALIF., USA	6	SFO SAN FRANCISCO, CALIF., USA	
	7	SJC SAN JOSE, CALIF., USA	8	SNA SANTA ANA, CALIF., USA	
30	KC	AIR CAMBODGE			
	1	BKK BANGKOK, THAILAND	2	BAT BATTAMBANG, KHMER REP.	
	3	HKG HONG KONG, BR CROWN COLONY	4	KMP KOMPONG SOM, KHMER REP.	
	5	MDT ODDOR MEANCHEY, KHMER REP.	6	PAI PAILIN, KHMER REP.	
	7	PNH PHNOM PENH, KHMER REPUBLIC	8	SGN SAIGON, S VIETNAM	
	9	SIN SINGAPORE, SINGAPORE			
31	AC	AIR CANADA			
	1	ANU ANTIGUA, WEST INDIES	2	BGI BARBADOS, WEST INDIES	
	3	BDA BERMUDA, ATLANTIC OCEAN	4	BOS BOSTON, MASS., USA	
	5	BRU BRUSSELS, BELGIUM	6	YYC CALGARY, ALTA., CANADA	
	7	ORD CHICAGO, ILL-ORARE ARPT, USA	8	CLE CLEVELAND, OHIO, USA	
	9	CPH COPENHAGEN, DENMARK	10	YXR EARLTON, ONT.	
	11	YEG EDMONTON, ALTA-INT APT, CANADA	12	FRA FRANKFURT, GERMANY	
	13	YFC FREDERICTON, N.B.	14	FPO FREEPORT, BAHAMAS	
	15	YQX GANDER, NFLD., CANADA	16	PIK GLASGOW, SCOT-PRESTWICK ARPT.	
	17	YHZ HALIFAX, NOVA SCOTIA	18	KIN KINGSTON, JAMAICA	
	19	LHR LONDON, ENGLAND-HEATHROW ARPT	20	YXU LONDON, ONT.	
	21	LAX LOS ANGELES, CALIF., USA	22	MIA MIAMI, FLA., USA.	
	23	YQM MONCTON, N.B.	24	MBJ MONTEGO BAY, JAMAICA	
	25	YUL MONTREAL, QUE., CANADA	26	SVO MOSCOW, USSR-SHEREMETYEVO ARPT	
	27	NAS NASSAU, BAHAMAS	28	JFK NEW YORK, NY-KENNEDY INT ARPT, USA	
	29	YYB NORTH BAY, ONT.	30	YOW OTTAWA, ONTARIO, CANADA	
	31	ORY PARIS, FRANCE-ORLY ARPT	32	POS PORT OF SPAIN, TRINIDAD	
	33	PRG PRAGUE, CZECHOSLOVAKIA	34	YQB QUEBEC, QUE.	
	35	YQR REGINA, SASK.	36	YUY ROUYN - NORANDA, QUE.	
	37	YSJ SAINT JOHN, N.B.	38	YXE SASKATOON, SASK.	
	39	YAM SAULT STE MARIE, ONT.	40	YZV SEVEN ISLANDS, QUE.	
	41	SNN SHANNON, IRELAND	42	YYT ST. JOHNS, NFLD.	
	43	YJT STEPHENVILLE, NFLD.	44	YSB SUDBURY, ONT.	
	45	YQY SYDNEY, N.S.	46	TPA TAMPA, FLA., USA.	
	47	YQT THUNDER BAY, ONT.	48	YTS TIMMINS, ONT.	
	49	YYZ TORONTO, ONT., CANADA	50	YVO VAL D'OR, QUE.	
	51	YVR VANCOUVER, B.C., CANADA	52	YYJ VICTORIA, B.C.	
	53	VIE VIENNA, AUSTRIA	54	YQG WINDSOR, ONT., CANADA	
	55	YWG WINNIPEG, MAN., CANADA	56	YQI YARMOUTH, N.S.	
	57	ZRH ZURICH, SWITZERLAND			
32	QJ	AIR CENTRE			
	1	CFE CLERMONT-FERRAND, FRANCE	2	LPY LE PUY, FRANCE	

85	NH	ALL NIPPON			
	21	OIT	OITA, JAPAN	22	OKJ	OKAYAMA, JAPAN
	23	OKA	OKINAWA, RYUKYU IS., JAPAN	24	OMJ	OMURA, JAPAN
	25	OSA	OSAKA, JAPAN	26	OIM	OSHIMA IS., JAPAN
	27	CTS	SAPPORO, JAPAN-CHITOSE ARPT.	28	SDJ	SENDAI, JAPAN
	29	TAK	TAKAMATSU, JAPAN	30	HND	TOKYO, JAPAN-HANEDA AIRPORT
	31	TTJ	TOTTORI, JAPAN	32	TOY	TOYAMA, JAPAN
	33	UBJ	UBE, JAPAN	34	GAJ	YAMAGATA, HONSHU, JAPAN
	35	YGJ	YONAGO, JAPAN			
86	AL	ALLEGHENY AIRLINES			
	1	CAK	AKRON/CANTON, OHIO, USA	2	ALB	ALBANY, N.Y., USA
	3	ABE	ALLENTOWN, PA., USA	4	AOO	ALTOONA, PA., USA
	5	ACY	ATLANTIC CITY, N.J., USA	6	BAL	BALTIMORE, MD., USA
	7	BGM	BINGHAMTON, N.Y., USA	8	BMG	BLOOMINGTON, IND., USA
	9	BOS	BOSTON, MASS., USA	10	BFD	BRADFORD, PA., USA
	11	BDR	BRIDGEPORT, CONN., USA	12	BUF	BUFFALO, N.Y., USA
	13	BTV	BURLINGTON, VT., USA	14	WWD	CAPE MAY, N.J., USA
	15	CRW	CHARLESTON, W. VA., USA	16	MDW	CHICAGO, ILL-MIDWAY ARPT, USA.
	17	ORD	CHICAGO, ILL-OHARE ARPT, USA.	18	CVG	CINCINNATI, OHIO, USA
	19	CKB	CLARKSBURG, W. VA., USA	20	CLE	CLEVELAND, OHIO, USA
	21	CMH	COLUMBUS, OHIO, USA	22	DNV	DANVILLE, ILL., USA
	23	DAY	DAYTON, OHIO, USA.	24	DTW	DETROIT, MICH-METROPOLITAN APT, USA
	25	DUJ	DU BOIS, PA., USA	26	EKN	ELKINS, W. VA., USA
	27	ELM	ELMIRA, N.Y., USA	28	ERI	ERIE, PA., USA
	29	EVV	EVANSVILLE, IND., USA	30	FKL	FRANKLIN, PA., USA
	31	GFL	GLENS FALLS, N.Y., USA	32	GRR	GRAND RAPIDS, MICH., USA
	33	HGR	HAGERSTOWN, MD., USA	34	MDT	HARRISBURG, PA-INTERNATIONAL ARPT.
	35	BDL	HARTFORD, CONN., USA	36	HZL	HAZLETON, PA., USA
	37	HTS	HUNTINGTON, W. VA., USA	38	IND	INDIANAPOLIS, IND., USA
	39	ISP	ISLIP, N.Y., USA	40	ITH	ITHACA, N.Y., USA
	41	JHW	JAMESTOWN, N.Y., USA	42	JST	JOHNSTOWN, PA., USA
	43	EEN	KEENE, N.H., USA	44	LAF	LAFAYETTE, IND., USA
	45	LNS	LANCASTER, PA., USA	46	LEX	LEXINGTON, KY., USA
	47	LIA	LIMA, OHIO, USA	48	SDF	LOUISVILLE, KY., USA
	49	MFD	MANSFIELD, OHIO, USA	50	MSS	MASSENA, N.Y., USA
	51	MEM	MEMPHIS, TENN., USA	52	MSP	MINNEAPOLIS/ST PAUL, MINN, USA
	53	YUL	MONTREAL, QUE., CANADA	54	MGW	MORGANTOWN, W. VA., USA
	55	MIE	MUNCIE, IND., USA	56	BNA	NASHVILLE, TENN., USA
	57	HVN	NEW HAVEN, CONN., USA.	58	GON	NEW LONDON, CONN., USA
	59	JFK	NEW YORK, NY-KENNEDY INT ARPT, USA	60	LGA	NEW YORK, NY-LA GUARDIA ARPT.,USA
	61	EWR	NEW YORK, NY-NEWARK ARPT, USA	62	PHF	NEWPORT NEWS, VA., USA
	63	ORF	NORFOLK, VA., USA	64	OGS	OGDENSBURG, N.Y., USA
	65	PKB	PARKERSBURG, W. VA., USA	66	PHL	PHILADELPHIA, PA., USA
	67	PNE	PHILADELPHIA, PA-NE ARPT, USA	68	PSB	PHILIPSBURG, PA., USA
	69	PIT	PITTSBURGH, PA., USA	70	PLB	PLATTSBURGH, N.Y., USA
	71	PVD	PROVIDENCE, R.I., USA	72	RDG	READING, PA., USA
	73	ROC	ROCHESTER, N.Y., USA.	74	RUT	RUTLAND, VT., USA
	75	SBY	SALISBURY, MD., USA	76	SLK	SARANAC LAKE, N.Y., USA

86	AL	ALLEGHENY AIRLINES					
	77	SBN	SOUTH BEND, IND., USA	78	STL	ST. LOUIS, MO., USA
	79	SYR	SYRACUSE, N.Y., USA	80	HUF	TERRE HAUTE, IND., USA
	81	TOL	TOLEDO, OHIO, USA	82	YYZ	TORONTO, ONT., CANADA
	83	TTN	TRENTON, N.J., USA	84	UCA	UTICA, N.Y., USA.
	85	DCA	WASHINGTON, DC-NATIONAL ARPT., USA	86	ART	WATERTOWN, N.Y., USA
	87	HPN	WHITE PLAINS, N.Y., USA	88	AVP	WILKES-BARRE/SCRANTON, PA., USA
	89	IPT	WILLIAMSPORT, PA., USA	90	ILG	WILMINGTON, DEL., USA
	91	ORH	WORCESTER, MASS., USA	92	YNG	YOUNGSTOWN, OHIO, USA
87	VJ	ALLEN AVIATION, INC.					
	1	MCI	KANSAS CITY, MO., USA	2	LNC	LAWRENCE, KAN., USA
	3	MHK	MANHATTAN, KAN., USA	4	TOP	TOPEKA, KAN., USA
88	TS	ALOHA AIRLINES					
	1	ITO	HILO, HAWAII; HAWAII, USA	2	HNL	HONOLULU, OAHU; HAWAII, USA
	3	OGG	KAHULUI, MAUI; HAWAII, USA	4	MKK	KAUNAKAKAI, MOLOKAI; HAW., USA
	5	KOA	KONA, HAWAII; HAWAII, USA	6	LIH	LIHUE, KAUAI; HAWAII, USA
89	AK	ALTAIR AIRLINES INC-AIR-TAXI					
	1	ALB	ALBANY, N.Y., USA	2	ABE	ALLENTOWN, PA., USA
	3	BAL	BALTIMORE, MD., USA	4	BDR	BRIDGEPORT, CONN., USA
	5	MDT	HARRISBURG, PA-INTERNATIONAL ARPT.	6	BDL	HARTFORD, CONN., USA
	7	ISP	ISLIP, N.Y., USA	8	PHL	PHILADELPHIA, PA., USA
	9	RIC	RICHMOND, VA., USA	10	DCA	WASHINGTON, DC-NATIONAL ARPT., USA
	11	HPN	WHITE PLAINS, N.Y., USA	12	AVP	WILKES-BARRE/SCRANTON, PA., USA
	13	IPT	WILLIAMSPORT, PA., USA	14	ILG	WILMINGTON, DEL., USA
90	DY	ALYEMDA, DEMOCRATIC YEMEN AIRLINES					
	1	ADE	ADEN, DEM. REP. OF YEMEN	2	HAY	AL GHAYDAH, DEM. REP. OF YEMEN
	3	AXK	ATAQ, DEM. REP. OF YEMEN	4	BHN	BEIHAN, DEM. REP. OF YEMEN
	5	BEY	BEIRUT, LEBANON	6	BUO	BURAO, SOMALI REP.
	7	CAI	CAIRO, ARAB REP OF EGYPT	8	JIB	DJIBOUTI, FR TER AFARS & ISSAS
	9	GXF	GHURAF, DEM. REP. OF YEMEN	10	HGA	HARGEISA, SOMALI REP
	11	KWI	KUWAIT, KUWAIT	12	MFK	MAIFAA, DEM. REP. OF YEMEN
	13	MGQ	MOGADISHO, SOMALI REP.	14	DSD	DISHN, S. ARABIA
	15	RIY	RIYAN, DEM. REP. OF YEMEN	16	TAI	TAIZ, YEMEN ARAB REPUBLIC
91	AA	AMERICAN AIRLINES					
	1	ACA	ACAPULCO, MEXICO	2	ALB	ALBANY, N.Y., USA
	3	AUA	ARUBA, NETH. ANTILLES	4	AKL	AUCKLAND, NEW ZEALAND
	5	BAL	BALTIMORE, MD., USA	6	BOS	BOSTON, MASS., USA
	7	BUF	BUFFALO, N.Y., USA	8	CRW	CHARLESTON, W. VA., USA
	9	MDW	CHICAGO, ILL-MIDWAY ARPT, USA.	10	ORD	CHICAGO, ILL-OHARE ARPT, USA.
	11	CVG	CINCINNATI, OHIO, USA	12	CLE	CLEVELAND, OHIO, USA
	13	CMH	COLUMBUS, OHIO, USA	14	CUR	CURACAO, NETH. ANTILLES
	15	DAL	DALLAS/FT. WORTH, TEXAS, USA	16	DAY	DAYTON, OHIO, USA.
	17	DTW	DETROIT, MICH-METROPOLITAN APT, USA	18	ELP	EL PASO, TEXAS, USA
	19	BDL	HARTFORD, CONN., USA	20	HNL	HONOLULU, OAHU; HAWAII, USA

193 FI FLUGFELAG-ICELANDAIR

9	HZK	HUSAVIK, ICELAND	10	IFJ	ISAFJORDUR, ICELAND
11	LHR	LONDON, ENGLAND-HEATHROW AIRPT	12	OAK	NARSSARSSUAQ, GREENLAND
13	NOR	NORDFJORDUR, ICELAND	14	OSL	OSLO, NORWAY
15	PEJ	PATREKSFJORDUR, ICELAND	16	REN	RAUFARHOEN, ICELAND
17	KEF	REYKJAVIK, ICE. KEFLAVIK AIRPT.	18	RER	REYKJAVIK, ICELAND
19	SAK	SAUDARKROKUR, ICELAND	20	THO	THORSHOFN, ICELAND
21	VAG	VAGAR IS, FAEROE IS, DENMARK	22	VEY	VESTMANNAEYJAR, ICELAND

194 FL FRONTIER AIRLINES

1	ALM	ALAMOGORDO, N.M., USA	2	ALS	ALAMOSA, COLO., USA
3	ABQ	ALBUQUERQUE, N.M., USA.	4	AIA	ALLIANCE, NEBR., USA
5	AMA	AMARILLO, TEXAS, USA	6	BVO	BARTLESVILLE, OKLA., USA
7	BIL	BILLINGS, MONT., USA	8	BIS	BISMARCK, N.D., USA
9	BZN	BOZEMAN, MONT., USA	10	CPR	CASPER, WYO., USA
11	CDR	CHADRON, NEBR., USA	12	CYS	CHEYENNE, WYO., USA
13	COD	CODY, WYO., USA	14	COS	COLORADO SPRINGS, COLO., USA
15	OLU	COLUMBUS, NEBR., USA	16	CEZ	CORTEZ, COLO., USA
17	DAL	DALLAS/FT. WORTH, TEXAS, USA	18	DEN	DENVER, COLO., USA
19	DRO	DURANGO, COLO., USA	20	ELP	EL PASO, TEXAS, USA
21	WDG	ENID, OKLA., USA	22	FMN	FARMINGTON, N.M., USA
23	FYV	FAYETTEVILLE, ARK., USA	24	FLG	FLAGSTAFF, ARIZ., USA
25	TBN	FT. LEONARD WOOD, MO., USA	26	FSM	FT. SMITH, ARK., USA
27	GUP	GALLUP, N.M., USA	28	GCK	GARDEN CITY, KAN., USA
29	GGW	GLASGOW, MONT., USA	30	GDV	GLENDIVE, MONT., USA
31	GLD	GOODLAND, KAN., USA	32	GRI	GRAND ISLAND, NEBR., USA
33	GJT	GRAND JUNCTION, COLO., USA	34	GTF	GREAT FALLS, MONT., USA
35	GUC	GUNNISON, COLO., USA	36	HRO	HARRISON, ARK., USA
37	HST	HASTINGS, NEBR., USA	38	HVR	HAVRE, MONT., USA
39	HYS	HAYS, KAN., USA	40	HOT	HOT SPRINGS, ARK., USA
41	JAC	JACKSON, WYO., USA	42	JLN	JOPLIN, MO., USA.
43	MCI	KANSAS CITY, MO., USA	44	EAR	KEARNEY, NEBR., USA
45	LAA	LAMAR, COLO., USA	46	LAR	LARAMIE, WYO., USA
47	LAS	LAS VEGAS, NEV., USA.	48	LAW	LAWTON, OKLA., USA
49	LWT	LEWISTOWN, MONT., USA	50	LBL	LIBERAL, KAN., USA
51	LNK	LINCOLN, NEBR., USA	52	LIT	LITTLE ROCK, ARK., USA
53	MHK	MANHATTAN, KAN., USA	54	MCK	MC COOK, NEBR., USA
55	MEM	MEMPHIS, TENN., USA	56	MLS	MILES CITY, MONT., USA
57	MOT	MINOT, N.D., USA	58	MSO	MISSOULA, MONT., USA
59	MTJ	MONTROSE, COLO., USA	60	MKO	MUSKOGEE, OKLA., USA
61	LBF	NORTH PLATTE, NEBR., USA	62	OKC	OKLAHOMA CITY, OKLA., USA.
63	OMA	OMAHA, NEBR., USA	64	PRX	PARIS, TEXAS, USA
65	PPF	PARSONS, KAN., USA	66	PHX	PHOENIX, ARIZ., USA
67	PNC	PONCA CITY, OKLA., USA	68	PUB	PUEBLO, COLO., USA
69	RAP	RAPID CITY, S.D., USA	70	RIW	RIVERTON, WYO., USA
71	RKS	ROCK SPRINGS, WYO., USA	72	SLN	SALINA, KAN., USA
73	SLC	SALT LAKE CITY, UTAH, USA	74	BFF	SCOTTSBLUFF, NEBR., USA
75	SDY	SIDNEY, MONT., USA	76	SNY	SIDNEY, NEBR., USA
77	SVC	SILVER CITY, N.M., USA	78	STL	ST. LOUIS, MO., USA

194	FL	FRONTIER AIRLINES				
	79	HDN	STEAMBOAT SPRINGS, COLO, USA	80	SWO	STILLWATER, OKLA., USA
	81	TOP	TOPEKA, KAN., USA	82	TUS	TUCSON, ARIZ., USA
	83	TUL	TULSA, OKLA., USA	84	VEL	VERNAL, UTAH, USA
	85	WYS	WEST YELLOWSTONE, MONT., USA	86	ICT	WICHITA, KAN., USA
	87	ISN	WILLISTON, N.D., USA	88	INW	WINSLOW, ARIZ., USA
	89	OLF	WOLF POINT, MONT., USA	90	WRL	WORLAND, WYO., USA
195	GA	GARUDA INDONESIAN AIRWAYS				
	1	AMQ	AMBON, MOLUCCA IS., INDONESIA	2	AMI	AMPENAN, LOMBOK IS., INDONESIA
	3	AMS	AMSTERDAM, NETHERLANDS	4	ATH	ATHENS, GREECE
	5	BPN	BALIKPAPAN, BORNEO, INDONESIA	6	BTJ	BANDA ACEH, SUMATRA, INDO.
	7	BKK	BANGKOK, THAILAND	8	BDJ	BANJARMASIN, BORNEO, INDO.
	9	BKS	BENGKULU, SUMATRA, INDONESIA	10	BJK	BJAK, N IRIAN, INDONESIA
	11	BOM	BOMBAY, INDIA	12	CMB	COLOMBO, REP. OF SRI LANKA
	13	DPS	DENPASAR, BALI, INDONESIA	14	FRA	FRANKFURT, GERMANY
	15	HKG	HONG KONG, BR CROWN COLONY	16	JKT	JAKARTA, JAVA, INDONESIA
	17	DJB	JAMBI, INDONESIA	18	JOG	JOGYAKARTA, JAVA, INDONESIA
	19	KHI	KARACHI, PAKISTAN	20	KDI	KENDARI, CELEBES, INDONESIA
	21	KUL	KUALA LUMPUR, MALAYSIA	22	KOE	KUPANG, TIMOR, INDONESIA
	23	MES	MEDAN, SUMATRA, INDONESIA	24	MDC	MENADO, INDONESIA
	25	PDG	PADANG, SUMATRA, INDONESIA	26	PKU	PAKANBARU, SUMATRA, INDONESIA
	27	PLM	PALEMBANG, SUMATRA, INDONESIA	28	PGK	PANGKALPINANG, INDONESIA
	29	LBG	PARIS, FRANCE-LE BOURGET ARPT	30	PNK	PONTIANAK, BORNEO, INDONESIA
	31	FCO	ROME, ITALY-LEONARDO DA VINCI ARPT	32	SRG	SEMARANG, JAVA, INDONESIA
	33	SIN	SINGAPORE, SINGAPORE	34	SUB	SURABAYA, JAVA, INDONESIA
	35	SYD	SYDNEY, NSW AUSTRALIA	36	TJQ	TANJUNG APANDAN, INDONESIA
	37	TNJ	TANJUNG PINANG, BINTAN, INDO.	38	TKG	TELUKBETUNG, SUMATRA, INDO.
	39	UPG	UJUNG PANDANG, CELEBES, INDO.			
196	GO	GCS AIRLINES				
	1	CLE	CLEVELAND, OHIO, USA	2	GOO	GALION, OHIO, USA
	3	MFD	MANSFIELD, OHIO, USA			
197	YY	GENERAL AIR				
	1	BRE	BREMEN, GERMANY	2	CGN	COLOGNE, GERMANY
	3	FRA	FRANKFURT, GERMANY	4	HAM	HAMBURG, GERMANY
	5	HGL	HELGOLAND, GERMANY	6	NVG	JUIST, GERMANY
	7	KSF	KASSEL, GERMANY	8	LBC	LUEBECK, GERMANY
	9	MUC	MUNICH, GERMANY	10	NTU	NORDERNEY, GERMANY
	11	AGE	WANGEROOGE, GERMANY	12	EMT	WESTERLAND, GERMANY
198	GD	GEYSERLAND AIRWAYS LTD.				
	1	AKL	AUCKLAND, NEW ZEALAND	2	GIS	GISBORNE, NEW ZEALAND
	3	KKO	KAIKOHE, NEW ZEALAND	4	KPA	KAMEHAU, NEW ZEALAND
	5	MTA	MATAMATA, NEW ZEALAND	6	ROT	ROTORUA, NEW ZEALAND
199	GH	GHANA AIRWAYS				
	1	ABJ	ABIDJAN, IVORY COAST	2	ACC	ACCRA, GHANA

214	HY	HOUSTON METRO AIRLINES				
	1	BPT	BEAUMONT/PT. ARTHUR, TEX., USA	2	CLC	CLEAR LAKE CITY, TEXAS, USA
	3	GLS	GALVESTON, TEXAS, USA	4	IAH	HOUSTON, TEXAS, USA
	5	LJN	LAKE JACKSON, TEXAS, USA	6	VCT	VICTORIA, TEXAS, USA
215	XE	HUB AIRLINES-AIR-TAXI				
	1	BTL	BATTLE CREEK, MICH., USA	2	CGX	CHICAGO, ILL-MEIGS FIELD, USA.
	3	ORD	CHICAGO, ILL-OHARE ARPT, USA.	4	DET	DETROIT, MICH-CITY ARPT, USA
	5	DTW	DETROIT, MICH-METROPOLITAN APT, USA	6	FWA	FT. WAYNE, IND., USA
216	HW	HUGHES AIRWEST				
	1	APV	APPLE VALLEY, CALIF., USA	2	AST	ASTORIA, ORE., USA
	3	BFL	BAKERSFIELD, CALIF., USA	4	BLH	BLYTHE, CALIF., USA
	5	BOI	BOISE, IDAHO, USA	6	BUR	BURBANK, CALIF., USA
	7	YYC	CALGARY, ALTA., CANADA	8	CDC	CEDAR CITY, UTAH, USA
	9	CIC	CHICO, CALIF., USA	10	CEC	CRESCENT CITY, CALIF., USA
	11	IPL	EL CENTRO, CALIF., USA	12	EPH	EPHRATA, WASH., USA
	13	EUG	EUGENE, ORE., USA	14	ACV	EUREKA/ARCATA, CALIF., USA
	15	FAT	FRESNO, CALIF., USA	16	GCN	GRAND CANYON, ARIZ., USA
	17	GTF	GREAT FALLS, MONT., USA	18	GDL	GUADALAJARA, MEXICO
	19	HOM	HOQUIAM, WASH., USA	20	IDA	IDAHO FALLS, IDAHO, USA
	21	IYK	INYOKERN, CALIF., USA	22	FCA	KALISPELL, MONT., USA
	23	IGM	KINGMAN, ARIZ., USA	24	LMT	KLAMATH FALLS, ORE., USA
	25	LAP	LA PAZ, MEXICO	26	LHU	LAKE HAVASU CITY, ARIZ., USA
	27	TVL	LAKE TAHOE, CALIF., USA	28	LAS	LAS VEGAS, NEV., USA.
	29	LWS	LEWISTON, IDAHO, USA	30	LAX	LOS ANGELES, CALIF., USA
	31	MZT	MAZATLAN, MEXICO	32	MFR	MEDFORD, ORE., USA
	33	MRY	MONTEREY, CALIF., USA	34	OTH	NORTH BEND, ORE., USA
	35	OAK	OAKLAND, CALIF., USA	36	OLM	OLYMPIA, WASH., USA
	37	ONT	ONTARIO, CALIF., USA	38	OXR	OXNARD, CALIF., USA
	39	PGA	PAGE, ARIZ., USA	40	PSP	PALM SPRINGS, CALIF., USA
	41	PMD	PALMDALE, CALIF., USA	42	PSC	PASCO, WASH., USA
	43	PRB	PASO ROBLES, CALIF., USA	44	PHX	PHOENIX, ARIZ., USA
	45	PIH	POCATELLO, IDAHO, USA	46	PDX	PORTLAND, ORE., USA.
	47	PVR	PUERTO VALLARTA, MEXICO	48	PUW	PULLMAN, WASH., USA
	49	RDD	REDDING, CALIF., USA	50	RDM	REDMOND, ORE., USA
	51	RNO	RENO, NEV., USA	52	SMF	SACRAMENTO, CALIF., USA
	53	SLC	SALT LAKE CITY, UTAH, USA	54	SAN	SAN DIEGO, CALIF., USA
	55	SFO	SAN FRANCISCO, CALIF., USA	56	SJC	SAN JOSE, CALIF., USA
	57	SNA	SANTA ANA, CALIF., USA	58	SBA	SANTA BARBARA, CALIF., USA
	59	SMX	SANTA MARIA, CALIF., USA	60	STS	SANTA ROSA, CALIF., USA
	61	SEA	SEATTLE, WASH., USA.	62	GEG	SPOKANE, WASH., USA
	63	SCK	STOCKTON, CALIF., USA	64	TUS	TUCSON, ARIZ., USA
	65	TWF	TWIN FALLS, IDAHO, USA	66	ALW	WALLA WALLA, WASH., USA
	67	EAT	WENATCHEE, WASH., USA	68	YAK	YAKIMA, WASH., USA
	69	YUM	YUMA, ARIZ., USA			
217	IB	IBERIA				
	1	ALC	ALICANTE, SPAIN	2	LEI	ALMERIA, SPAIN

286	NP	NOR-CAL AVIATION, INC.				
	5	SMF	SACRAMENTO, CALIF., USA			
287	NK	NORCANAIR				
	1	YVC	LAC LA RONGE, SASK.	2	YPA	PRINCE ALBERT, SASK.
	3	YQR	REGINA, SASK.	4	YXE	SASKATOON, SASK.
	5	YSF	STONEY RAPIDS, SASK.	6	YBE	URANIUM CITY, SASK.
	7	ZWL	WOLLASTON LAKE, SASK			
288	ND	NORDAIR				
	1	YMT	CHIBOUGAMAU, QUEBEC	2	YGV	DECEPTION BAY, QUE.
	3	YKU	FORT GEORGE, QUEBEC	4	YFB	FROBISHER BAY, N.W.T.
	5	YVP	FT. CHIMO, QUE.	6	YGW	GREAT WHALE, QUE.
	7	YUX	HALL BEACH, N.W.T.	8	YHM	HAMILTON, ONT.
	9	YMS	LA GRANDE, QUEBEC, CANADA	10	YMM	MATAGAMI, QUEB C, CANADA
	11	YUL	MONTREAL, QUE., CANADA	12	YOW	OTTAWA, ONTARIO, CANADA
	13	PIT	PITTSBURGH, PA., USA	14	YRB	RESOLUTE BAY, N.W.T.
	15	YVO	VAL D'OR, QUE.	16	YQG	WINDSOR, ONT., CANADA
289	NR	NORONTAIR				
	1	YXR	EARLTON, ONT.	2	YAM	SAULT STE MARIE, ONT.
	3	YSB	SUDBURY, ONT.	4	YTS	TIMMINS, ONT.
290	JV	NORTH CAY AIRWAYS				
	1	BQN	AGUADILLA, P.R.	2	CPX	CULEBRA, PUERTO RICO
	3	MAZ	MAYAGUEZ, PUERTO RICO	4	PSE	PONCE, PUERTO RICO
	5	SIG	SAN JUAN, P.R.-ISLA GRANDE ARPT	6	SJU	SAN JUAN, PUERTO RICO
	7	STX	ST. CROIX, VIRGIN IS.	8	STT	ST. THOMAS, VIRGIN IS.
	9	VQS	VIEQUES, PUERTO RICO			
291	NC	NORTH CENTRAL AIRLINES				
	1	ABR	ABERDEEN, S.D., USA	2	APN	ALPINA, MICH., USA
	3	JVL	BELOIT/JANESVILLE, WIS., USA	4	BJI	BEMIDJI, MINN., USA
	5	BEH	BENTON HARBOR, MICH., USA	6	BIS	BISMARCK, N.D., USA
	7	BRD	BRAINERD, MINN., USA	8	BKX	BROOKINGS, S.D., USA
	9	MDW	CHICAGO, ILL-MIDWAY ARPT, USA.	10	ORD	CHICAGO, ILL-O'HARE ARPT, USA.
	11	CVG	CINCINNATI, OHIO, USA	12	CLE	CLEVELAND, OHIO, USA
	13	CMH	COLUMBUS, OHIO, USA	14	DAY	DAYTON, OHIO, USA.
	15	DEN	DENVER, COLO., USA	16	DTW	DETROIT, MICH-METROPOLITAN APT, USA
	17	DVL	DEVILS LAKE, N.D., USA	18	DLH	DULUTH, MINN., USA
	19	EAU	EAU CLAIRE, WIS., USA	20	ESC	ESCANABA, MICH., USA
	21	FRM	FAIRMONT, MINN., USA	22	FAR	FARGO, N.D., USA
	23	FNT	FLINT, MICH., USA	24	GFK	GRAND FORKS, N.D., USA
	25	GRR	GRAND RAPIDS, MICH., USA	26	GRB	GREEN BAY, WIS., USA
	27	CMX	HANCOCK, MICH., USA	28	HIB	HIBBING, MINN., USA
	29	HON	HURON, S.D., USA	30	INL	INT'L FALLS, MINN., USA
	31	IMT	IRON MOUNTAIN, MICH., USA	32	IMD	IRONWOOD, MICH., USA
	33	JXN	JACKSON, MICH., USA	34	AZO	KALAMAZOO, MICH., USA
	35	MCI	KANSAS CITY, MO., USA	36	LSE	LA CROSSE, WIS., USA

291	NC	NORTH CENTRAL AIRLINES			
	37	LAN	LANSING, MICH., USA	38	MSN	MADISON, WIS., USA
	39	MBL	MANISTEE, MICH., USA	40	MTW	MANITOWOC, WIS., USA
	41	MKT	MANKATO, MINN., USA	42	MQT	MARQUETTE, MICH., USA
	43	MNM	MENOMINEE, MICH., USA	44	MKE	MILWAUKEE, WIS., USA
	45	MSP	MINNEAPOLIS/ST PAUL, MINN, USA	46	MOT	MINOT, N.D., USA
	47	MHE	MITCHELL, S.D., USA	48	MKG	MUSKEGON, MICH., USA
	49	LGA	NEW YORK, NY-LA GUARDIA ARPT., USA	50	OFK	NORFOLK, NEBR., USA
	51	OMA	OMAHA, NEBR., USA	52	OSH	OSHKOSH, WIS., USA
	53	PLN	PELLSTON, MICH., USA	54	PIR	PIERRE, S.D., USA
	55	RAP	RAPID CITY, S.D., USA	56	RHI	RHINELANDER, WIS., USA
	57	RST	ROCHESTER, MINN., USA	58	MBS	SAGINAW, MICH., USA
	59	SSM	SAULT STE MARIE, MICH., USA	60	SUX	SIOUX CITY, IOWA, USA
	61	FSD	SIOUX FALLS, S.D., USA	62	SBN	SOUTH BEND, IND., USA
	63	TVF	THIEF RIVER FALLS, MINN., USA	64	YQT	THUNDER BAY, ONT.
	65	YYZ	TORONTO, ONT., CANADA	66	TVC	TRAVERSE CITY, MICH., USA
	67	ATY	WATERTOWN, S.D., USA	68	CWA	WAUSAU, WISC-CENTRAL WIS ARPT. USA
	69	OTG	WORTHINGTON, MINN., USA	70	YKN	YANKTON, S.D., USA
292	NS	NORTHEAST AIRLINES LIMITED			
	1	AMS	AMSTERDAM, NETHERLANDS	2	BFS	BELFAST, N. IRELAND
	3	BIO	BILBAO, SPAIN	4	BOD	BORDEAUX, FRANCE
	5	DUB	DUBLIN, IRELAND	6	GCI	GUERNSEY, CHANNEL IS., U.K.
	7	JER	JERSEY, CHANNEL IS., U.K.	8	KLU	KLAGENFURT, AUSTRIA
	9	LBA	LEEDS/BRADFORD, ENGLAND	10	LHR	LONDON, ENGLAND-HEATHROW ARPT
	11	LUX	LUXEMBOURG, LUXEMBOURG	12	NCL	NEWCASTLE, ENGLAND
293	WS	NORTHERN WINGS LTD.			
	1	YBX	BLANC SABLON, QUE.	2	ZGS	GETHSEMANI, QUEBEC
	3	YHR	HARRINGTON HARBOUR, QUE.	4	YGV	HAVRE ST. PIERRE, QUE.
	5	ZKG	KEGASKA, QUEBEC	6	ZLT	LA TABATIERE, QUEBEC
	7	YLP	MINGAN, QUE.	8	YNA	NATASHQUAN, QUE.
	9	ZFB	OLD FORT BAY, QUEBEC	10	YTN	RIVIERE AU TONNERRE, QUE.
	11	YZV	SEVEN ISLANDS, QUE.	12	YIF	ST. AUGUSTIN, QUE
	13	ZSP	ST. PAUL, QUEBEC	14	YWH	WHALEHEAD, QUEBEC
294	NR	NORTHWARD AIRLINES LTD.			
	1	LAK	AKLAVIK, N.W.T.	2	YJM	ARCTIC RED RIVER, N.W.T.
	3	YDA	DAWSON CITY, Y.T.	4	YWJ	FORT FRANKLIN, N.W.T.
	5	YGH	FT. GOOD HOPE, N.W.T.	6	ZFN	FT. MCPHERSON, N.W.T.
	7	ZFN	FT. NORMAN, N.W.T.	8	YEV	INUVIK, NWT
	9	YMA	MAYO, Y.T.	10	YVU	NORMAN WELLS, NWT
	11	YUB	TUKTOYAKTUK, N.W.T.	12	YXY	WHITEHORSE, Y.T.
295	NW	NORTHWEST ORIENT AIRLINES			
	1	ANC	ANCHORAGE, ALASKA, USA.	2	ATL	ATLANTA, GA., USA
	3	BIL	BILLINGS, MONT., USA	4	BIS	BISMARCK, N.D., USA
	5	BOS	BOSTON, MASS., USA	6	BZN	BOZEMAN, MONT., USA
	7	BTM	BUTTE, MONT., USA	8	MDW	CHICAGO, ILL-MIDWAY ARPT, USA.

296	OA	OLYMPIC AIRWAYS			
	53	ZRH ZURICH, SWITZERLAND			
297	OB	OPAL AIR SERVICES			
	1	ADL ADELAIDE, S. AUSTRALIA	2	ADO	ANDAMOOKA, S. AUST.
	3	AYQ AYERS ROCK, NT, AUSTRALIA	4	CPD	COOBER PEDY, S. AUSTRALIA
298	OL	OSTFRIESISCHE LUFTTRANSPORT GMBH			
	1	WTW BORKUM, GERMANY	2	DUS	DUSSELDORF, GERMANY
	3	WTX EMDEN, GERMANY	4	WHB	HAGE, GERMANY
	5	HAJ HANOVER, GERMANY	6	HGL	HELGOLAND, GERMANY
	7	WVQ JUIST, GERMANY	8	WVP	LANGEOOG, GERMANY
	9	WTU NORDERNEY, GERMANY	10	AGE	WANGEROOGE, GERMANY
299	OE	OUT ISLAND AIRWAYS			
	1	ASD ANDROS TOWN, BAHAMAS	2	UBL	CHUB CAY, BAHAMAS
	3	CRI CROOKED ISLAND, BAHAMAS	4	EGI	DEADMANS CAY, L.I. BAH
	5	FPO FREEPORT, BAHAMAS	6	GGT	GEORGE TOWN, BAHAMAS
	7	GHB GOVERNORS HARBOUR, BAH.	8	GHC	GREAT HARBOUR CAY, BAH.
	9	IGA INAGUA, BAHAMAS	10	MAY	MANGROVE CAY, BAHAMAS
	11	MHH MARSH HARBOUR, BAHAMAS	12	MYG	MAYAGUANA, BAHAMAS
	13	MIA MIAMI, FLA., USA.	14	NAS	NASSAU, BAHAMAS
	15	ELH NORTH ELEUTHERA, BAHAMAS	16	SAD	SAN ANDROS, ANDROS IS. BAH.
	17	ZSA SAN SALVADOR, BAHAMAS	18	TZN	SOUTH ANDROS, BAHAMAS
	19	SML STELLA MARIS, LONG IS. BAH.	20	BIC	THE BIGHT, BAHAMAS
	21	TCB TREASURE CAY, BAHAMAS			
300	OZ	OZARK AIRLINES			
	1	BMI BLOOMINGTON, ILL., USA	2	BRL	BURLINGTON, IOWA, USA
	3	CGI CAPE GIRARDEAU, MO., USA	4	CID	CEDAR RAPIDS/IOWA CITY, IA., USA
	5	CMI CHAMPAIGN, ILL., USA	6	MDW	CHICAGO, ILL-MIDWAY ARPT, USA.
	7	ORD CHICAGO, ILL-OHARE ARPT, USA.	8	CKV	CLARKSVILLE, TENN., USA
	9	CNI CLINTON, IOWA, USA	10	COU	COLUMBIA, MO., USA
	11	DAL DALLAS/FT. WORTH, TEXAS, USA	12	DEC	DECATUR, ILL., USA
	13	DEN DENVER, COLO., USA	14	DSM	DES MOINES, IOWA, USA
	15	DBQ DUBUQUE, IOWA, USA	16	FOD	FT. DODGE, IOWA, USA
	17	TBN FT. LEONARD WOOD, MO., USA	18	GBG	GALESBURG, ILL., USA
	19	IND INDIANAPOLIS, IND., USA	20	JLN	JOPLIN, MO., USA
	21	MCI KANSAS CITY, MO., USA	22	IRK	KIRKSVILLE, MO., USA
	23	AIZ LAKE OF THE OZARKS, MO., USA	24	SDF	LOUISVILLE, KY., USA
	25	MSN MADISON, WIS., USA	26	MWA	MARION, ILL., USA
	27	MCW MASON CITY, IOWA, USA	28	MTO	MATTOON, ILL., USA
	29	MKE MILWAUKEE, WIS., USA	30	MSP	MINNEAPOLIS/ST PAUL, MINN, USA
	31	MLI MOLINE, ILL., USA	32	MVN	MOUNT VERNON, ILL., USA
	33	BNA NASHVILLE, TENN., USA	34	LGA	NEW YORK, NY-LA GUARDIA ARPT., USA
	35	OMA OMAHA, NEBR., USA	36	OTM	OTTUMWA, IOWA, USA
	37	OWB OWENSBORO, KY., USA	38	PAH	PADUCAH, KY., USA
	39	PIA PEORIA, ILL., USA.	40	QIN	QUINCY, ILL., USA
	41	RST ROCHESTER, MINN., USA	42	RFD	ROCKFORD, ILL., USA

300	OZ	OZARK AIRLINES				
	43	SUX	SIOUX CITY, IOWA, USA	44	FSD	SIOUX FALLS, S.D., USA
	45	SPI	SPRINGFIELD, ILL., USA	46	SGF	SPRINGFIELD, MO., USA
	47	STL	ST. LOUIS, MO., USA	48	SQI	STERLING/ROCK FALLS, ILL., USA
	49	TUL	TULSA, OKLA., USA	50	IAD	WASHINGTON, DC-DULLES ARPT., USA
	51	ALO	WATERLOO, IOWA, USA			
301	PS	PACIFIC SOUTHWEST AIRLINES-INTRA-STATE				
	1	BUR	BURBANK, CALIF., USA	2	FAT	FRESNO, CALIF., USA
	3	LGB	LONG BEACH, CALIF., USA	4	LAX	LOS ANGELES, CALIF., USA
	5	OAK	OAKLAND, CALIF., USA	6	ONT	ONTARIO, CALIF., USA
	7	SMF	SACRAMENTO, CALIF., USA	8	SAN	SAN DIEGO, CALIF., USA
	9	SFO	SAN FRANCISCO, CALIF., USA	10	SJC	SAN JOSE, CALIF., USA
	11	SCK	STOCKTON, CALIF., USA			
302	PW	PACIFIC WESTERN AIRLINES				
	1	BVU	BELLA BELLA, B.C., CANADA	2	QBC	BELLA COOLA, B.C.
	3	YYC	CALGARY, ALTA., CANADA	4	YCB	CAMBRIDGE BAY, NWT
	5	YBL	CAMPBELL RIVER, B.C.	6	YCG	CASTLEGAR, B.C.
	7	YDQ	COMOX, B.C.	8	YXC	CRANBROOK, B.C.
	9	YDQ	DAWSON CREEK, B.C.	10	YXD	EDMONTON, ALTA., CANADA
	11	YEG	EDMONTON, ALTA-INT APT, CANADA	12	YPY	FT. CHIPEWYAN, ALBERTA
	13	YMM	FT. MCMURRAY, ALTA.	14	YRB	FT. RESOLUTION, N.W.T.
	15	YFS	FT. SIMPSON, NWT	16	YSM	FT. SMITH, N.W.T.
	17	QGF	GRAND FORKS, B.C.	18	YHY	HAY RIVER, NWT
	19	YOJ	HIGH LEVEL, ALBERTA	20	YEV	INUVIK, NWT
	21	YKA	KAMLOOPS, B.C.	22	YLW	KELOWNA, B.C.
	23	WWW	NAMU, B.C., CANADA	24	YVQ	NORMAN WELLS, NWT
	25	ZOF	OCEAN FALLS, B.C.	26	YPE	PEACE RIVER, ALTA.
	27	YYF	PENTICTON, B.C.	28	YZT	PORT HARDY, B.C.
	29	YPW	POWELL RIVER, B.C.	30	YXS	PRINCE GEORGE, B.C.
	31	WPF	PRINCE RUPERT, B.C.-DIGBY ISLAND	32	YQZ	QUESNEL, B.C
	33	YRD	RAINBOW LAKE, ALTA.	34	YRB	RESOLUTE BAY, N.W.T.
	35	YZP	SANDSPIT, B.C.	36	SEA	SEATTLE, WASH., USA.
	37	YYD	SMITHERS, B.C.	38	ZTS	TAHSIS, B.C.
	39	YXT	TERRACE, B.C.	40	YAZ	TOFINO, BRITISH COLUMBIA
	41	YBE	URANIUM CITY, SASK.	42	YVR	VANCOUVER, B.C., CANADA
	43	YYJ	VICTORIA, B.C.	44	YQL	WILLIAMS LAKE, B.C.
	45	YWY	WRIGLEY, NWT	46	YZF	YELLOWKNIFE, N.W.T.
303	PK	PAKISTAN INTERNATIONAL				
	1	AUH	ABU DHABI, TRUCIAL OMAN	2	ADE	ADEN, DEM. REP. OF YEMEN
	3	AMS	AMSTERDAM, NETHERLANDS	4	ATH	ATHENS, GREECE
	5	BGW	BAGHDAD, IRAQ	6	BAH	BAHRAIN IS., ARABIAN GULF
	7	BKK	BANGKOK, THAILAND	8	BEY	BEIRUT, LEBANON
	9	CAI	CAIRO, ARAB REP OF EGYPT	10	CJL	CHITRAL, PAKISTAN
	11	CMB	COLOMBO, REP. OF SRI LANKA	12	DAM	DAMASCUS, ARAB REP OF SYRIA
	13	DAR	DAR ES SALAAM, TANZANIA	14	DSK	DERA ISMAIL, PAKISTAN
	15	DHA	DHAHRAN, SAUDI ARABIA	16	DOH	DOHA, QATAR, ARABIA

308	EB	PENNSYLVANIA COMMUTER-AIR TAXI			
	3	MDT HARRISBURG, PA-INTERNATIONAL ARPT	4	LNS	LANCASTER, PA., USA
	5	SCE STATE COLLEGE, PA., USA	6	DCA	WASHINGTON, DC-NATIONAL ARPT., USA
309	PR	PHILIPPINE AIRLINES			
	1	AMS AMSTERDAM, NETHERLANDS	2	APX	APARRI, PHILIPPINE IS.
	3	BCD BACOLOD, PHILIPPINE IS.	4	BAG	BAGUIO, PHILIPPINE IS.
	5	BKK BANGKOK, THAILAND	6	BSO	BASCO, PHILIPPINE IS.
	7	BPH BISLIG, PHILIPPINE IS	8	BXU	BUTUAN, PHILIPPINE IS.
	9	CGY CAGAYAN DE ORO, PHILIPPINE IS	10	CYP	CALBAYOG, PHILIPPINE IS.
	11	CRM CATARMAN, PHILIPPINE IS.	12	CYZ	CAUAYAN, PHILIPPINE IS.
	13	CLB CLRK, PHILIPPINE IS.	14	CBO	COTABATO, PHILIPPINE IS
	15	DVO DAVAO, PHILIPPINE IS	16	DGT	DUMAGUETE, PHILIPPINE IS.
	17	FRA FRANKFURT, GERMANY	18	GES	GENERAL SANTOS, PHILIPPINE IS.
	19	HKG HONG KONG, BR CROWN COLONY	20	HNL	HONOLULU, OAHU; HAWAII, USA
	21	IGN ILIGAN, PHILIPPINE IS.	22	ILO	ILOILO, PHILIPPINE IS
	23	KHI KARACHI, PAKISTAN	24	LGP	LEGASPI, PHILIPPINE IS
	25	MNL MANILA, PHILIPPINE IS	26	MEL	MELBOURNE, VIC., AUSTRALIA
	27	WNP NAGA, PHILIPPINE IS.	28	OZC	OZAMIS CITY, PHILIPPINE IS
	29	PPS PUERTO PRINCESA, PHILIPPINE IS	30	FCO	ROME, ITALY-LEONARDO DA VINCI ARPT
	31	SFO SAN FRANCISCO, CALIF., USA	32	SJI	SAN JOSE, PHILIPPINE IS
	33	SIN SINGAPORE, SINGAPORE	34	SUG	SURIGAO, PHILIPPINE IS.
	35	SYD SYDNEY, NSW AUSTRALIA	36	TAC	TACLOBAN, PHILIPPINE IS
	37	TPE TAIPEI, REP. OF CHINA (TAIWAN)	38	HND	TOKYO, JAPAN-HANEDA AIRPORT
	39	TUG TUGUEGARAO, PHILIPPINE IS	40	VRC	VIRAC, PHILIPPINE IS
	41	ZAM ZAMBOANGA, PHILIPPINE IS			
310	PP	PHILLIPS AIRLINES			
	1	ORD CHICAGO, ILL-OHARE ARPT, USA.	2	MGC	MICHIGAN CITY, IND., USA
	3	VPZ VALPARAISO, IND., USA			
311	FR	PHILLIPS FLYING SERVICE INC.			
	1	MVU MACKINAC ISLAND, MICH., USA	2	PLN	PELLSTON, MICH., USA
312	PI	PIEDMONT AVIATION			
	1	AVL ASHEVILLE, N.C., USA	2	ATL	ATLANTA, GA., USA
	3	AGS AUGUSTA, GA., USA	4	BAL	BALTIMORE, MD., USA
	5	BKW BECKLEY, W. VA., USA	6	BLF	BLUEFIELD, W. VA. USA
	7	CHS CHARLESTON, S.C., USA	8	CRW	CHARLESTON, W. VA., USA
	9	CLT CHARLOTTE, N.C., USA	10	CHO	CHARLOTTESVILLE, VA., USA
	11	MDW CHICAGO, ILL-MIDWAY ARPT, USA.	12	CVG	CINCINNATI, OHIO, USA
	13	CAE COLUMBIA, S.C., USA	14	CMH	COLUMBUS, OHIO, USA
	15	DAN DANVILLE, VA., USA	16	FAY	FAYETTEVILLE, N.C., USA
	17	FLO FLORENCE, S.C., USA	18	GSB	GOLDSBORO, N.C., USA
	19	LWB GREENBRIER, W. VA., USA	20	GSO	GREENSBORO, N.C., USA
	21	GSP GREENVILLE/SPARTANBURG, SC, USA	22	HKY	HICKORY, N.C., USA
	23	HSP HOT SPRINGS, VA., USA	24	HTS	HUNTINGTON, W. VA., USA
	25	JAX JACKSONVILLE, N.C., USA	26	ISO	KINSTON, N.C., USA
	27	TYS KNOXVILLE, TENN., USA	28	LEX	LEXINGTON, KY., USA

312	PI	PIEDMONT AVIATION					
	29	LOZ	LONDON, KY., USA	30	SDF	LOUISVILLE, KY., USA	
	31	LYH	LYNCHBURG, VA., USA	32	MEM	MEMPHIS, TENN., USA	
	33	CRE	MYRTLE BEACH, S.C., USA	34	BNA	NASHVILLE, TENN., USA	
	35	EWN	NEW BERN, N.C., USA	36	LGA	NEW YORK, NY-LA GUARDIA ARPT., USA	
	37	EWR	NEW YORK, NY-NEWARK ARPT, USA	38	PHF	NEWPORT NEWS, VA., USA	
	39	ORF	NORFOLK, VA., USA	40	PKB	PARKERSBURG, W. VA., USA	
	41	RDU	RALEIGH/DURHAM, N.C., USA	42	RIC	RICHMOND, VA., USA	
	43	ROA	ROANOKE, VA., USA	44	RWI	ROCKY MOUNT/WILSON, N.C., USA	
	45	SHD	STAUNTON, VA., USA	46	TRI	TRI-CITY AIRPORT, TENN., USA	
	47	IAD	WASHINGTON, DC-DULLES ARPT., USA	48	DCA	WASHINGTON, DC-NATIONAL ARPT., USA	
	49	ILM	WILMINGTON, N.C., USA	50	INT	WINSTON SALEM, N.C., USA	
313	PM	PILGRIM-AIR-TAXI					
	1	ALB	ALBANY, N.Y., USA	2	BOS	BOSTON, MASS., USA	
	3	BDR	BRIDGEPORT, CONN., USA	4	BDL	HARTFORD, CONN., USA	
	5	HVN	NEW HAVEN, CONN., USA.	6	GON	NEW LONDON, CONN., USA	
	7	JFK	NEW YORK, NY-KENNEDY INT ARPT, USA				
314	NN	PINEHURST AIRLINES INC.					
	1	CLT	CHARLOTTE, N.C., USA	2	NSS	PINEHURST, N.C., USA	
	3	RDU	RALEIGH/DURHAM, N.C., USA				
315	PU	PLUNA					
	1	ATI	ARTIGAS, URUGUAY	2	ASU	ASUNCION, PARAGUAY	
	3	BUV	BELLA UNION, URUGUAY	4	AEP	BUENOS AIRES, ARG-AEROPARQUE ARPT	
	5	MVD	MONTEVIDEO, URUGUAY	6	PDU	PAYSANDU, URUGUAY	
	7	PDP	PUNTA DEL ESTE, URUGUAY	8	RVY	RIVERA, URUGUAY	
	9	STY	SALTO, URUGUAY	10	VCH	VICHADERO, URUGUAY	
316	LO	POLISH AIRLINES					
	1	AMS	AMSTERDAM, NETHERLANDS	2	ATH	ATHENS, GREECE	
	3	BGW	BAGHDAD, IRAQ	4	BEY	BEIRUT, LEBANON	
	5	BEG	BELGRADE, YUGOSLAVIA	6	SXF	BERLIN, GER. DEM. REP.	
	7	BRU	BRUSSELS, BELGIUM	8	OTP	BUCHAREST, ROU-OTOPENI ARPT	
	9	BUD	BUDAPEST, HUNGARY	10	BZG	BYDGOSZCZ, POLAND	
	11	CAI	CAIRO, ARAB REP OF EGYPT	12	CND	CONSTANTA, ROUMANIA	
	13	CPH	COPENHAGEN, DENMARK	14	DAM	DAMASCUS, ARAB REP OF SYRIA	
	15	DBV	DUBROVNIK, YUGOSLAVIA	16	FRA	FRANKFURT, GERMANY	
	17	GDN	GDANSK, POLAND	18	GVA	GENEVA, SWITZERLAND	
	19	HAM	HAMBURG, GERMANY	20	HEL	HELSINKI, FINLAND	
	21	IST	ISTANBUL, TURKEY	22	KTW	KATOWICE, POLAND	
	23	IEV	KIEV, USSR	24	OSZ	KOSZALIN, POLAND	
	25	KRK	KRAKOW, POLAND	26	LED	LENINGRAD, USSR	
	27	LHR	LONDON, ENGLAND-HEATHROW ARPT	28	MAD	MADRID, SPAIN	
	29	LIN	MILAN, ITALY-FORLANINI-LINATE	30	SVO	MOSCOW, USSR-SHEREMETYEVO ARPT	
	31	JFK	NEW YORK, NY-KENNEDY INT ARPT, USA	32	NIC	NICOSIA, CYPRUS	
	33	CDG	PARIS, FRANCE-LE BOURGET ARPT	34	POZ	POZNAN, POLAND	
	35	PRG	PRAGUE, CZECHOSLOVAKIA	36	RJK	RIJEKA, YUGOSLAVIA	

359	SA	SOUTH AFRICAN AIRWAYS					
	27	MSU	MASERU, LESOTO	28	MRU	MAURITIUS, INDIAN OCEAN	
	29	JFK	NEW YORK, NY-KENNEDY INT ARPT, USA	30	OUH	OUDTSHOORN, REP OF S AFRICA	
	31	ORY	PARIS, FRANCE-ORLY ARPT	32	PER	PERTH, W AUSTRALIA	
	33	PBZ	PIETTENBERG, REP OF S AFRICA	34	PLZ	PORT ELIZABETH, REP OF S AFRICA	
	35	GIG	RIO DE JANEIRO, BRA-GALEAO ARPT	36	FCO	ROME, ITALY-LEONARDO DA VINCI ARPT	
	37	SID	SAL ISLAND, CAPE VERDE IS	38	SAY	SALISBURY, RHODESIA	
	39	SYD	SYDNEY, NSW AUSTRALIA	40	TVL	TANANARIVE, MDG REP-IVATO APT.	
	41	UTN	UPINGTON, REP OF S AFRICA	42	VIE	VIENNA, AUSTRIA	
	43	WDH	WINDHOEK, S. W. AFRICA	44	ZRH	ZURICH, SWITZERLAND	
360	SL	SOUTHEAST AIRLINES, INC.-AIR TAXI					
	1	EYW	KEY WEST, FLA., USA	2	MTH	MARATHON, FLA., USA	
	3	MIA	MIAMI, FLA., USA.				
361	YC	SOUTHEAST COMMUTER AIRLINES					
	1	BHM	BIRMINGHAM, ALA., USA	2	MOB	MOBILE, ALA., USA	
	3	MGM	MONTGOMERY, ALA., USA				
362	SO	SOUTHERN AIRWAYS					
	1	ABY	ALBANY, GA., USA	2	AND	ANDERSON, S.C., USA	
	3	ANB	ANNISTON, ALA., USA	4	AHN	ATHENS, GA., USA	
	5	ATL	ATLANTA, GA., USA	6	BTR	BATON ROUGE, LA., USA	
	7	BHM	BIRMINGHAM, ALA., USA	8	CHS	CHARLESTON, S.C., USA	
	9	CLT	CHARLOTTE, N.C., USA	10	CHA	CHATTANOOGA, TENN., USA	
	11	MDW	CHICAGO, ILL-MIDWAY ARPT, USA.	12	CAE	COLUMBIA, S.C., USA	
	13	CSG	COLUMBUS, GA., USA	14	GTR	COLUMBUS, MISS., USA	
	15	CSV	CROSSVILLE, TENN., USA	16	DHN	DOTHAN, ALA., USA	
	17	VPS	EGLIN A.F. BASE, FLA., USA	18	GAD	GADSDEN, ALA., USA	
	19	GSP	GREENVILLE/SPARTANBURG, SC, USA	20	GLH	GREENVILLE, MISS., USA	
	21	GWO	GREENWOOD, MISS., USA	22	GRD	GREENWOOD, S.C., USA	
	23	GPT	GULFPORT/BILOXI, MISS., USA	24	HBG	HATTIESBURG, MISS., USA	
	25	HSV	HUNTSVILLE/DECATUR, ALA., USA.	26	JAN	JACKSON/VICKSBURG, MISS., USA	
	27	MKL	JACKSON, TENN., USA	28	JAX	JACKSONVILLE, FLA., USA	
	29	TYS	KNOXVILLE, TENN., USA	30	LUL	LAUREL, MISS., USA	
	31	MEM	MEMPHIS, TENN., USA	32	MEI	MERIDIAN, MISS., USA	
	33	MIA	MIAMI, FLA., USA.	34	MOB	MOBILE, ALA., USA	
	35	MLU	MONROE, LA., USA	36	MGM	MONTGOMERY, ALA., USA	
	37	MGR	MOULTRIE/THOMASVILLE, GA., USA	38	MSL	MUSCLE SHOALS, ALA., USA	
	39	BNA	NASHVILLE, TENN., USA	40	HEZ	NATCHEZ, MISS., USA	
	41	MSY	NEW ORLEANS, LA., USA.	42	LGA	NEW YORK, NY-LA GUARDIA ARPT., USA	
	43	EWR	NEW YORK, NY-NEWARK ARPT, USA	44	MCO	ORLANDO, FLA., USA	
	45	PFN	PANAMA CITY, FLA., USA	46	SYI	SHELBYVILLE, TENN., USA	
	47	STL	ST. LOUIS, MO., USA	48	TLH	TALLAHASSEE, FLA., USA	
	49	TRI	TRI-CITY AIRPORT, TENN., USA	50	TUP	TUPELO, MISS., USA	
	51	TCL	TUSCALOOSA, ALA., USA	52	UOX	UNIVERSITY, MISS., USA	
	53	VLD	VALDOSTA, GA., USA	54	IAD	WASHINGTON, DC-DULLES ARPT., USA	

381	TT	TEXAS INTERNATIONAL AIRLINES, INC				
	1	ABI	ABILENE, TEXAS, USA	2	ABQ	ALBUQUERQUE, N.M., USA.
	3	ESF	ALEXANDRIA, LA., USA	4	AMA	AMARILLO, TEXAS, USA
	5	AUS	AUSTIN, TEXAS, USA	6	BTR	BATON ROUGE, LA., USA
	7	BPT	BEAUMONT/PT. ARTHUR, TEX., USA	8	BGS	BIG SPRING, TEXAS, USA
	9	BWD	BROWNWOOD, TEXAS, USA	10	CNM	CARLSBAD, N.M., USA
	11	CVN	CLOVIS, N.M., USA	12	CRP	CORPUS CHRISTI, TEXAS, USA
	13	DAL	DALLAS/FT. WORTH, TEXAS, USA	14	DEN	DENVER, COLO., USA
	15	ELD	EL DORADO/CAMDEN, ARK., USA	16	ELP	EL PASO, TEXAS, USA
	17	HRL	HARLINGEN, TEXAS, USA	18	HOB	HOBBS, N.M., USA
	19	HOT	HOT SPRINGS, ARK., USA	20	IAH	HOUSTON, TEXAS, USA
	21	JAN	JACKSON/VICKSBURG, MISS., USA	22	JBR	JONESBORO, ARK., USA
	23	LFT	LAFAYETTE, LA., USA	24	LCH	LAKE CHARLES, LA., USA
	25	LRD	LAREDO, TEXAS, USA.	26	LIT	LITTLE ROCK, ARK., USA
	27	GGG	LONGVIEW, TEXAS, USA	28	LAX	LOS ANGELES, CALIF., USA
	29	LBB	LUBBOCK, TEXAS, USA	30	LFK	LUFKIN, TEXAS, USA
	31	MFE	MC ALLEN, TEXAS, USA	32	MEM	MEMPHIS, TENN., USA
	33	MEX	MEXICO CITY, MEXICO	34	MAF	MIDLAND, TEXAS, USA
	35	MLU	MONROE, LA., USA	36	MTY	MONTERREY, MEXICO
	37	MSY	NEW ORLEANS, LA., USA.	38	PBF	PINE BLUFF, ARK., USA
	39	ROW	ROSWELL, N.M., USA	40	SLC	SALT LAKE CITY, UTAH, USA
	41	SJT	SAN ANGELO, TEXAS, USA	42	SAT	SAN ANTONIO, TEX., USA.
	43	SHV	SHREVEPORT, LA., USA	44	TPL	TEMPLE, TEXAS, USA
	45	TXK	TEXARKANA, ARK., USA	46	TYR	TYLER, TEXAS, USA
	47	ACT	WACO, TEXAS, USA	48	SPS	WICHITA FALLS, TEXAS, USA
382	TH	THAI AIRWAYS COMPANY				
	1	BAO	BAN MAK KHAENG, THAILAND	2	BKK	BANGKOK, THAILAND
	3	CNX	CHIANG MAI, THAILAND	4	CEI	CHIANG RAI, THAILAND
	5	KKC	KHON KAEN, THAILAND	6	LPT	LAMPANG, THAILAND
	7	LOE	LOEI, THAILAND	8	MGN	MAE HONGSORN, THAILAND
	9	NOP	NAKHON PHANOM, THAILAND	10	NNT	NAN, THAILAND
	11	PYU	PATTANI, THAILAND	12	PEN	PENANG, MALAYSIA
	13	PRS	PHITSANULOKE, THAILAND	14	HKT	PHUKET, THAILAND
	15	PLU	PRAE, THAILAND	16	SNO	SAKON NAKHON, THAILAND
	17	SGZ	SINGORA, THAILAND	18	TAK	TAK, THAILAND
	19	TST	TRANG, THAILAND	20	UBP	UBOL, THAILAND
	21	UTR	UTTARADIT, THAILAND	22	VTE	VIENTIANE, LAOS
383	TG	THAI AIRWAYS INTERNATIONAL				
	1	BKK	BANGKOK, THAILAND	2	CCU	CALCUTTA, INDIA
	3	CPH	COPENHAGEN, DENMARK	4	DAC	DACCA, BANGLADESH
	5	DEL	DELHI, INDIA	6	DPS	DENPASAR, BALI, INDONESIA
	7	HKG	HONG KONG, BR CROWN COLONY	8	JKT	JAKARTA, JAVA, INDONESIA
	9	KTM	KATHMANDU, NEPAL	10	KUL	KUALA LUMPUR, MALAYSIA
	11	MNL	MANILA, PHILIPPINE IS	12	OSA	OSAKA, JAPAN
	13	PEN	PENANG, MALAYSIA-BUTTERWORTH ARPT.	14	RGN	RANGOON, BURMA
	15	SGN	SAIGON, S VIETNAM	16	SIN	SINGAPORE, SINGAPORE
	17	SYD	SYDNEY, NSW AUSTRALIA	18	TPE	TAIPEI, REP. OF CHINA (TAIWAN)

TABLE B-18

U.S. REGIONAL AIRLINES
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	ELEVATION(FT)	NORMAL MAX TEMP(°F)	EXISTING RUNWAY LENGTH(FT.)	GRADIENT (SLOPES)
ABERDEEN	ABR	ABERDEEN MUNI.	S.D.	NC	1,301	86	6,900	.05
ABILENE	ABI	ABILENE MUNI.	TEXAS	TT	1,789	94	7,199	.39
AKRON/CANTON	CAK	AKRON-CANTON	OHIO	AL	1,228	83	6,398	.23
ALAMOGORDO	ALM	ALAMOGORDO MUNI	N.M.	FL	4,197	94	7,005	.80
ALAMOSA	ALS	ALAMOSA MUNI.	COLO.	FL	7,535	82	7,872	.05
ALBANY	ABY	ALBANY-DOUGHERTY CO.	GA.	SO	196	94	6,601	.10
ALBANY	ALB	ALBANY CO.	N.Y.	AL	288	84	6,000	.21
ALBUQUERQUE	ABQ	ALBUQUERQUE SUNPORT	N.M.	FL,TT	5,352	93	13,373	.16
ALEXANDRIA	ESF	ESLER FIELD	LA.	TT	108	95	5,999	.07
ALLENTOWN	ABE	ALLENTOWN-BETHLEHEM-EASTON	PA.	AL	388	85	6,185	.18
ALLIANCE	AIA	ALLIANCE MUNI	NEBR	FL	3,930	89	9,201	.05
ALPENA	APN	PHELPS COLLINS	MICH.	NC	689	70	9,000	.04
ALTOONA/MARTINSBURG	AOO	BLAIR CO.	PA.	AL	1,504	81	5,465	.67
AMARILLO	AMA	AMARILLO AIR TERMINAL	TEXAS	FL,TT	3,605	93	13,500	.03
ANDERSON	AND	ANDERSON CO.	S.C.	SO	782	92	5,001	.10
ANNISTON	ANB	ANNISTON-CALHOUN COUNTY	ALA.	SO	611	92	5,009	.34
APPLE VALLEY	APV	APPLE VALLEY/NEW	CALIF.	RW	3,059	99	6,498	1.5
ASHEVILLE	AVL	ASHEVILLE MUNI.	N.C.	PI	2,162	85	6,500	.78
ATHENS	AHN	ATHENS MUNI.	GA.	SO	807	91	4,992	.96
ATLANTA	ATL	W.B. HARTSFIELD ATLANTA INT.	G.A	PI,SO	1,026	90	10,000	.55
ATLANTIC CITY	AIY	ATLANTIC CITY MUNI.	N.J.	AL	11	82	2,950	.04
ASTORIA	AST	CLATSOP	ORE.	RW	11	69	5,796	.05
AUGUSTA	AGS	BUSH FIELD	GA.	PI	145	93	8,000	.15
AUSTIN	AUS	ROBERT MUELLER MUNI.	TEXAS	TT	632	96	7,270	.77
BAKERSFIELD	BFL	MEADOWS FIELD	CALIF.	RW	491	102	6,708	.28
BALTIMORE	BAL	BALTIMORE-WASH. INTL.	MD.	PI,AL	146	85	9,500	.12
BARTLESVILLE	BVO	FRANK PHILLIPS	OKLA.	FL	715	95	6,200	.56
BATON ROUGE	BTR	RYAN	LA	TT,SO	70	92	6,000	.08
BEAUMONT/PORT ARTHUR	BPT	JEFFERSON CO.	TEXAS	TT	16	93	6,751	.12
BECKLEY	BKW	RALEIGH CO. MEM'L	W.VA.	PI	2,504	87	5,000	.44
BEMIDJI	BJI	BEMIDJI MUNI	MINN.	NC	1,389	79	5,700	.14
BENTON HARBOR	BEH	ROSS FIELD	MICH.	NC	643	82	5,107	.29
BIG SPRING	HCA	HOWARD CO.	TEXAS	TT	2,564	95	5,494	.62

U.S. REGIONAL AIRLINES
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	ELEVATION(FT)	NORMAL MAX TEMP(°F)	EXISTING RUNWAY LENGTH(FT)	GRADIENT (SLOPE)
BILLINGS	BIL	LOGAN FIELD	MONT	FL	3,606	87	8,600	.93
BINGHAMTON	BGM	BROOME CO.	N.Y.	AL	1,629	80	6,299	1.0
BIRMINGHAM	BHM	BIRMINGHAM MUNI.	ALA.	SO	643	91	10,000	.26
BISMARK	BIS	BISMARK MUNI.	N.D.	NC,FR	1.677	85	6,921	.18
BLOOMINGTON	BMI	BLOOMINGTON-NORMAL	ILL.	OZ	875	88	6,500	.09
BLOOMINGTON	BMG	MONROE CO.	IND.	AL	847	88	5,202	.12
BLYTHE	BLH	BLYTHE	CALIF.	RW	397	109	6,479	.03
BOISE	BOI	BOISE AIR TERMINAL	IDAHO	RW	2,858	90	8,993	.37
BOSTON	BOS	GEN'L E.L. LOGAN INT'L	MASS.	AL	19	82	10,080	.04
BOZEMAN	BZN	GALLATIN FIELD	MONT.	FL	4,458	76	9,000	.43
BRADFORD	BFD	BRADFORD REGIONAL	PA.	AL	2,143	83	6,499	.29
BRAINERD	BRD	BRAINERD-CROWN WING CO.	MINN.	NC	1,226	81	5,000	.03
BRIDGEPORT	BDR	IGOR SIKORSKI MEMORIAL	CONN.	AL	9	83	4,761	.04
BRISTOL	TRI	TRI CITY	TENN.	PI,SO	1,519	85	6,600	.44
BROOKINGS	BKX	BROOKINGS MUNI.	S.D.	NC	1,637	85	5,431	.41
BROWNWOOD	BWD	BROWNWOOD MUNI.	TEXAS	TT	1,386	98	5,598	.33
BUFFALO	BUF	GREATER BUFFALO INT'L	N.Y.	AL	723	70	8,100	.61
BURBANK	BUR	HOLLYWOOD-BURBANK	CALIF.	RW,PSA	775	88	6,955	1.24
BURLINGTON	BRL	BURLINGTON MUNI.	IOWA	OZ	697	87	6,702	.28
BURLINGTON	BTV	BURLINGTON INT'L	VT.	AL	335	82	7,807	.33
CAPE GIRARDEAU	CGI	CAPE GIRARDEAU MUNI.	MO.	OZ	342	91	6,499	.07
WILDWOOD	WWD	CAPE MAY CO.	N.J.	AL	22	81	5,000	.05
CARLSBAD	CNM	CAVERN CITY AIR TRML	N.M.	TT	3,276	96	6,670	.54
CASPER	CPR	NATRONA CO. INT'L.	WYO	FL	5,348	90	9,061	.30
CEDAR CITY	CDC	CEDAR CITY MUNI.	UTAH	RW	5,622	90	6,100	.19
CEDAR RAPIDS	CID	CEDAR RAPIDS MUNI.	IOWA	OZ	863	87	7,000	.14
CHADRON	CDR	CHADRON MUNI.	NEBR.	FL	3,295	89	6,000	.49
CHAMPAIGN	CMI	U. OF ILL.-WILLARD	ILL.	OZ	754	86	6,500	.14
CHARLESTON	CRW	KANAWHA	W.VA.	PI,AL	982	87	6,303	.92
CHARLESTON	CHS	CHARLESTON AFB MUNI.	S. CAR.	PI,SO	45	89	9,000	.11
CHARLOTTE	CLT	DOUGLAS MUNI.	N.C.	PI,SO	748	88	7,845	.32
CHARLOTTESVILLE	CHO	CHARLOTTESVILLE-ALBERMARL	VA.	PI	640	76	6,000	.32
CHATTANOOGA	CHA	LOVELL FIELD	TENN.	SO	682	90	7,400	.27

U.S. REGIONAL AIRLINES
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	ELEVATION(FT)	NORMAL MAX TEMP(°F)	EXISTING RUNWAY LENGTH(FT)	GRADIENT (SLOPE)
CHEYENNE	CYS	CHEYENNE MUNI.	WYO.	FL	6,156	82	9,201	.59
CHICAGO	MDW	CHICAGO-MIDWAY	ILL.	OZ,NC,PI,SO,AL	619	84	6,519	.09
CHICAGO	ORD	CHICAGO O HARE INT'L	ILL.	OZ NC, AL	667	84	11,600	.14
CHICO	CIC	CHICO MUNI.	CALIF.	RW	238	98	6,722	.48
CINCINNATI	CVG	COVINGTON-CINCINNATI	OHIO	NC,PI,AL	890	85	9,501	.37
CLARKSBURG	CKB	BENEDUM	W.VA.	AL	1,203	86	5,200	.38
CLARKSVILLE	CKV	OUTLAW FIELD	TENN.	OZ	550	92	5,000	.50
CLEVELAND	CLE	CLEVELAND-HOPKINS INT'L	OHIO	NC,AL	792	83	9,000	.25
CLINTON	CWI	CLINTON MUNI	IOWA.	OZ	707	87	5,204	.28
CLOVIS	CVN	CLOVIS MUNI.	N. MEX.	TT	4,214	91	5,690	.45
CODY	COD	CODY MUNI.	WYO.	FL	5,089	86	7,107	.31
COLLEGE STA.	CLL	EASTERWOOD FIELD	TEXAS	TT	319	97	5,161	.15
COLORADO SPRINGS	COS	PETERSON FIELD	COLO.	FL	6,172	84	11,013	1.19
COLUMBIA	COU	COLUMBIA REGIONAL	MO.	OZ	889	89	6,499	.11
COLUMBIA	CAE	COLUMBIA METRO.	S.C.	PI,SO	236	92	7,551	.27
COLUMBUS	CSG	COLUMBUS METRO.	GA.	SO	397	92	7,000	.14
COLUMBUS	GTR	GOLDEN TRIANGLE REGIONAL	MISS.	SO	263	93	6,497	.15
COLUMBUS	OLU	COLUMBUS MUNI.	NEBR.	FL	1,443	90	5,002	.07
COLUMBUS	CMH	PORT COLUMBUS INT'L	OHIO	NC,PI,AL	816	86	10,700	.10
CORPUS CHRISTI	CRP	CORPUS CHRISTI INT'L	TEXAS	TT	43	94	7,500	.05
CORTEZ	CEZ	CORTEZ-MONTEZUMA CO.	COLO.	FL	5,914	89	7,205	.13
CORVALLIS	CVD	CORVALLIS MUNI.	ORE.	RW	246	81	5,067	.12
CRESCENT CITY	CEC	JACK McNAMARA FIELD	CALIF.	RW	57	67	5,000	.14
DALLAS	DAL	DALLAS LOVE FIELD	TEXAS	OZ,FL,TT	487	95	8,800	.03
DANVILLE	DNV	VERMILION CO.	ILL.	AL	695	87	5,400	.82
DANVILLE	DAN	DANVILLE MUNI.	VA.	PI	582	87	5,000	.40
DAYTON	DAY	J.M. COX DAYTON MUNI.	OHIO	NC,AL	1,008	88	9,500	.02
DECATUR	DEC	DECATUR	ILL.	OZ	679	89	6,500	.07
DENVER	DEN	STAPLETON INT'L	COLO.	NC,FL,TT,OZ	5,331	87	11,500	.42
DES MOINES	DSM	DES MOINES MUNI.	IOWA	OZ	957	86	9,000	.51
DETROIT	DTW	DETROIT METRO. WAYNE CO.	MICH.	NC,AL	639	84	10,500	.02
DEVILS LAKE	DVL	DEVILS LAKE MUNI.	N.D.	NC	1,454	81	5509	.22
DOTHAN	DHN	DOTHAN	ALA.	SO	401	92	8,500	.64
DU BOIS	DUJ	DU BOIS-JEFFERSON CO.	PA.	AL	1,817	86	5,505	.45
DUBUQUE	DBQ	DUBUQUE MUNI.	IOWA	OZ	1,076	84	6,500	.24
DULUTH	DLH	DULUTH INT'L	MINN	NC	1,429	77	10,154	.05

U.S. REGIONAL AIRLINES
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	ELEVATION (FT)	NORMAL MAX TEMP (°F)	EXISTING RUNWAY LENGTH (FT)	GRADIENT (SLOPE)
EAU CLAIRE	EAU	EAU CLAIRE MUNI.	WISC.	NC	906	82	7,299	.30
EL CENTRO	IPL	IMPERIAL COUNTY	CALIF.	RW	-56	107	5,305	.05
ELDORADO/CAMDEN	ELD	GOODWIN FIELD	ARK.	TT	277	94	5,099	.24
EL PASO	ELP	EL PASO INT'L	TEXAS	FL,TT	3,956	95	12,103	.22
EGLIN	VPS	EGLIN AFB	FLA.	SO	85	89	12,000	.28
ELKINS	EKN	ELKINS-RANDOLPH CO.	W.VA	AL	1,987	78	4,542	1.04
ELMIRA	ELM	CHEMUNG CO.	N.Y.	AL	951	83	5,604	.22
ENID	WDG	ENID WOODRING MUNI.	OKLA.	FL	1,167	95	6,503	.35
EPHRATA	EPH	EPHRATA MUNI	WASH.	RW	1,272	90	7,300	.16
ERIE	ERI	ERIE INT'L	PA.	AL	732	80	6,000	.04
ESCANABA	ESC	DELTA CO.	MICH.	NC	609	75	6,498	.25
EUGENE	EUG	MAHLON SWEET FIELD	ORE.	RW	365	82	6,200	.09
EUREKA/ARCATA	ACV	ARCATA/EUREKA	CALIF.	RW	218	61	5,999	.66
EVANSVILLE	EVV	EVANSVILLE DRESS REG.	IND.	AL	418	92	8,021	.44
FAIRMONT	FRM	FAIRMONT MUNI.	MINN.	NC	1,161	84	5,002	.09
FARGO	FAR	HECTOR FIELD	N.D.	NC	900	84	9,151	.02
FARMINGTON	FMN	FARMINGTON MUNI.	N.M.	FL	5,503	92	6,700	.42
FAYETTEVILLE	FYV	DRAKE FIELD	ARK.	FL	1,251	90	6,006	.26
FLAGSTAFF	FLG	PULLIAM	ARIZ	FL	7,012	81	7,000	.26
FLINT	FNT	BISHOP	MICH.	NC	781	82	7,199	.02
FLORENCE	FLO	FLORENCE MUNI.	S.C.	PI	147	90	6,500	.38
FORT DODGE	FOD	FORT DODGE MUNI.	IOWA	OZ	1,162	87	4,400	.46
FORT LEONARD WOOD	TBN	FORNEY AAF	MO.	OZ,FL	11,57	88	5,037	.18
FORT SMITH	FSM	FORT SMITH MUNI.	ARK.	FL	468	95	8,000	.34
FRANKLIN	FKL	CHESS-LAMBERTON	PA.	AL	1,540	83	5,200	.25
FRESNO	FAT	FRESNO AIR TERMINAL	CALIF.	RW	332	99	9,218	.04
GADSDEN	GAD	GADSEN	ALA.	SO	564	92	4,815	.31
GALESBURG	GBG	GALESBURG MUNI.	ILL.	OZ	764	86	5,794	.18
GALLUP	GUP	SENATOR CLARKE FIELD	N.M.	FL	6,468	88	6,300	.17
GALVESTON	GLS	SCHOLES FIELD	TEXAS	TT	7	89	6,000	.03
GARDEN CITY	GCK	GARDEN CITY MUNI.	KAN	FL	2,895	94	6,000	.17
GLASGOW	GGW	GLASGOW INT'L	MONT.	FL	2,293	87	6,007	.15
GLENDIVE	GDV	DAWSON COMMUNITY	MONT.	FL	2,457	89	5,700	.10
GOLDSBORO	GSB	GOLDSBORO-WAYNE MUNI	N.C.	PI	133	92	3,698	0
GOODLAND	GLD	RENNER FLD./GOODLAND MUN	KAN	FL	3,657	92	5,550	.16

U.S. REGIONAL AIRLINES
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	ELEVATION (FT)	NORMAL MAX TEMP) (°F)	EXISTING RUNWAY LENGTH (FT)	GRADIENT (SLOPE)
GRAND CANYON	GCN	GRAND CANYON NAT'L PARK	AIRZ.	RW	6,605	86	9,000	.81
GRAND FORKS	GFK	GRAND FORKS INT'L	N.D.	NC	843	83	7,350	.05
GRAND ISLAND	GRI	GRAND ISLAND AIR PARK	NEBR.	FL	1,846	91	7,189	.10
GRAND JUNCTION	GJT	WALKER FIELD	COLO.	FL	4,857	93	10,500	.34
GRAND RAPIDS	GRR	KENT CO.	MICH.	NC,AL	793	83	6,600	.06
GREAT FALLS	GTF	GREAT FALLS INT'L	MONT.	FL,RW	3,674	83	10,500	.18
GREEN BAY	GRB	AUSTIN-STRAUBEL FIELD	WISC.	NC	694	80	7,700	.17
GREENBRIER/LEWISBRG	LWD	GREENBRIER VALLEY	W.VA.	PI	2,301	85	6,000	.35
GREENSBORO	GSO	GREENSBORO-HIGH POINT	N.C.	PI	926	87	8,201	.18
GREENVILLE	GLH	GREENVILLE MUNI.	MISS.	SO	131	93	7,018	.04
GREENVILLE/SPARTANBR	GSP	GREENVILLE/SPARTANBURG	S.C.	PI	972	90	7,600	.20
GREENWOOD	GWO	GREENWOOD-LEFLORE	MISS.	SO	155	93	4,996	.10
GREENWOOD	GRD	GREENWOOD CO.	S.C.	SO	631	92	5,212	.27
GUADALAJARA	GDL	DON MIGUEL HIDALGO	MEXICO	RW	5,007	83	13,120	—
GULFPORT/BILOXI	GPT	GULFPORT MUNI.	MISS.	SO	28	91	9,000	.10
GUNNISON	GUC	GUNNISON COUNTY	COLO.	FL	7,660	83	7,200	.29
HAGERSTOWN	HGR	HAGERSTOWN REGIONAL	MD.	AL	704	87	5,449	.77
HANCOCK	CMX	HOUGHTON CO MEM'L	MICH	NC	1,091	75	6,500	.55
HARLINGTON	HRL	HARLINGTON INDUST. AIRPT.	TEXAS	TT	35	98	6,349	.03
HARRISBURG	MDT	HARRISBURG INT'L-OLMSTED	PA.	AL	308	36	8,010	.09
HARRISON	HRO	BOONE COUNTY	ARK.	FL	1,374	92	5,659	.27
HARTFORD	BDL	BRADLEY INT'L	CONN.	AL	173	83	9,501	.13
HASTINGS	HSI	HASTINGS MUNI.	NEBR.	FL	1954	91	5,600	.29
HAVRE	HVR	HAVRE CITY-CO.	MONT.	FL	2,584	85	5,200	.11
HATTIESBURG	HBG	HATTIESBURG MUNI.	MISS.	SO	151	93	6,219	.14
HAYS	HYS	HAYS MUNI.	KAN.	FL	1,998	93	5,700	.20
HAZLETON	HZL	HAZLETON MUNI.	PA.	AL	1604	80	4,900	.10
HIBBING	HIB	CHISHOLM-HIBBING	MINN.	NC	1,352	79	6,060	.22
HICKORY	HKY	HICKORY MUNI.	N.C.	PI	1,189	89	6,402	.83
HOBBS	HOB	LEA CO./HOBBS	N.M.	TT	3,659	95	7,399	.12
HOQUIAM	HQM	BOWERMAN	WASH.	RW	14	69	5,000	.04
HOT SPRINGS	HOT	MEMORIAL FIELD	ARK.	FL,TT	535	95	6,096	.57
HOUSTON	IAH	HOUSTON INT'L	TEXAS	TT	98	92	9,401	.04
HUNTINGTON	HTS	TRISTATE/WALKER-LONGFD.	W.VA.	PI,AL	828	88	5,281	0
HUNTSVILLE/DECATUR	HSV	HUNTSVILLE-MADISON JETPT.	ALA.	SO	629	92	8,000	.14
HURON	HON	W.W. HOWES MUNI	S.D.	N.C.	1,287	89	5,100	.08

U.S. REGIONAL AIRLINES
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USERS AIRLINES	ELEVATION(FT)	NORMAL MAX TEMP(°F)	EXISTING RUNWAY LENGTH(FT)	GRADIENT (SLOPE)
IDAHO FALLS	IDA	FANNING FIELD	IDAHO	RW	4,740	87	9,027	.21
INDIANOPOLIS	IND	INDIANOPOLIS MUNI.	IND.	AL,OZ	797	86	10,004	.32
INTERNATIONAL FALLS	INL	FALLS INTERNATIONAL	MINN.	NC	1,180	79	5,008	.31
INYOKERN	IYK	INYOKERN-KERN CO.	CALIF.	RW	2,457	103	7,315	.38
IRON MOUNTAIN	IMT	FORD	MICH.	NC	1,174	79	6,502	.70
IRONWOOD	IWD	GOGEBIC CO.	MICH.	NC	1,246	79	5,400	.08
ISLIP	ISP	ISLIP-MACARTHUR	N.Y.	AL	99	81	6,000	.17
ITHACA	ITH	TOMPKINS CO.	N.Y.	AL	1,099	84	5,801	.32
JACKSON	JXN	REYNOLDS MUNI.	MICH.	NC	1,000	84	5,278	.17
JACKSON/VICKSBURG	JAN	ALLEN C. THOMPSON FIELD	MISS.	SO,TT	345	93	8,500	.48
JACKSON	MKL	MCKELLAR FIELD	TENN.	SO	433	93	6,005	.42
JACKSON	JAC	JACKSONS HOLE	WYO	FL	6,444	82	6,305	.62
JACKSONVILLE	JAX	JACKSONVILLE INT'L	FLA	SO	29	92	8,000	.04
JACKSONVILLE	OAJ	ALBERT J. ELLIS	N.C.	PI	94	90	5,200	.05
JANESVILLE	JVL	ROCK CO.	WISC.	NC	808	85	6,701	.04
JOHNSTOWN	JST	JOHNSTOWN-CAMBRIA CO.	PA.	AL	2,284	82	5,488	.24
JONESBORO	JBR	JONESBORO MUNI.	ARK.	TT	261	93	5,599	.04
JOPLIN	JLN	JOPLIN MUNI	MO.	OZ,FL	980	91	6,505	.37
KALAMAZOO	AZO	KALAMAZOO MUNI.	MICH.	NC	874	85	5,300	.15
KALISPELL	FCA	GLACIER PARK INT'L	MONT.	RW	2,972	82	8,000	.18
KANSAS CITY	MCI	KANSAS CITY INT'L	MO.	OZ,NC,FL	1,025	91	10,801	.30
KEARNEY	EAR	KEARNEY MUNI.	NEBR.	FL	2,130	90	7,225	.04
KINSTON	ISO	STALLINGS FIELD	N.C.	PI	94	91	6,001	.14
KIRKSVILLE	IRK	CLARENCE CANNON MEM'L	MO.	OZ	966	87	6,004	.03
KLAMATH FALLS	LMT	KINGSLEY FIELD	ORE.	RW	4,092	85	10,300	.68
KNOXVILLE	TYS	MCGHEE TYSON	TENN.	PI,SO	981	90	9,000	.64
LA CROSSE	LSE	LA CROSSE MUNI	WISC.	NC	653	84	8,536	.09
LA PAZ	LAP	GEN. MANUEL MARQUEZ D.LE	MEXICO	RW	46	95	8,200	-
LAFAYETTE	LAF	PURDUE U.	IND.	AL	605	87	6,600	.09
LAFAYETTE	LFT	LAFAYETTE REGIONAL	LA.	TT	42	93	5,400	.10
LAKE CHARLES	LCH	LAKE CHARLES MUNI.	LA.	TT	16	92	6,500	.02
LAKE TAHOE	TVL	LAKE TAHOE	CALIF.	RW	6,264	75	8,544	.17
LAMAR	LAA	LAMAR MUNI	COLO.	FL	3,703	94	6,300	.45

U.S. REGIONAL AIRLINED
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINED	ELEVATION(FT)	NORMAL MAX TEMP(°F)	EXISTING RUNWAY LENGTH(FT)	GRADIENT (SLOPE)
LANCASTER	LNS	LANCASTER	PA	AL	403	87	5,398	.50
LANSING	LAN	CAPITAL REGION	MICH.	NC	859	81	6,500	.17
LARAMIE	LAR	GENERAL BREES FIELD	WYO.	FE	7,276	79	7,700	.12
LAS VEGAS	LAS	MC CARRAN INT'L	NEV.	FL,RW	2,171	104	12,545	1.03
LAUREL	LUL	LAUREL MUNI.	MISS.	SO	238	93	5,012	.10
LAWTON	LAW	LAWTON MUNI.	OKLA.	FL	1,109	98	6,000	.34
LEWISTON	LWS	LEWISTON-NEZ PERCE CO.	IDAHO	RW	1,438	93	6,512	.20
LEWISTON	LWT	LEWISTON MUNI.	MONT.	FL	4,165	82	5,630	.8
LEXINGTON	LEX	BLUE GRASS	KY.	PI,AL	979	86	6,500	.51
LIBERAL	LBL	LIBERAL MUNI.	KAN.	FL	2,887	95	7,100	.04
LIMA	LIA	LIMA	OHIO	AL	827	87	3,500	.08
LINCOLN	LNK	LINCOLN MUNI.	NEBR	FL	1,198	92	12,900	.29
LITTLE ROCK	LIT	ADAMS FIELD	ARK.	FL,TT	257	93	7,000	.06
LONDON	LOZ	CORBIN-LONDON WAR MEM'L	KY.	PI	1,212	86	6,002	.50
LONGVIEW	GGG	GREGG COUNTY	TEXAS	TT	365	97	10,000	.15
LAREDO	LOI	LAREDO INT'L	TEXAS	TT	539	99	7,700	.77
LOS ANGELES	LAX	LOS ANGELES INT'L	CALIF.	TT,RW,PSA	126	76	12,090	.28
LOUISVILLE	SDF	STANDIFORD FIELD	KY.	OZ,PI,AL	497	89	7,800	.38
LUBBOCK	LBB	LUBBOCK REGIONAL	TEXAS	TT	3,269	92	8,500	-
LUFKIN	LFK	ANGELINA CO.	TEXAS	TT	290	95	4,805	.30
LYNCHBURG	LYH	LYNCHBURG MUNI-PGLEN FLD	VA.	PI	942	86	5,800	.64
MADISON	MSN	TRUAX FIELD	WISC.	OZ,NC	859	85	7,621	.04
MANHATTAN	MHK	MANHATTAN MUNI.	KAN	FL	1,056	93	5,500	.13
MANISTEE	MBL	MANISTEE-BLACKER	MICH.	NC	620	80	5,502	.10
MANITOWOC	MTW	MANITOWOC MUNI.	WISC.	NC	651	79	5,000	.07
MANKATO	MKT	MANKATO MUNI.	MINN.	NC	1,020	83	5,400	.04
MANSFIELD	MFD	MANSFIELD LAHM MUNI.	OHIO	AL	1,297	87	9,000	.25
MARION	MWA	WILLIAMSON CO.	ILL	OZ	471	90	6,502	.23
MARQUETTE	MQT	MARQUETTE CO.	MICH.	NC	1,419	70	6,500	.23
MASON CITY	MCW	MASON CITY MUNI.	IOWA	OZ	1,213	83	6,504	.35
MASSENA	MSS	RICHARDS FIELD	N.Y.	AL	214	81	5,000	.23
MATTOON	MTO	COLES CO. MEMORIAL	ILL	OZ,AL	721	88	5,800	.18
MAZATLAN	MZT	GEN RAFAEL BUELNA	MEXICO	RW	16	91	8,856	.

U.S. REGIONAL AIRLINES
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	ELEVATION(FT)	NORMAL MAX TEMP(°F)	EXISTING RUNWAY LENGTH(FT)	GRADIENT (SLOPE)
MCALLEN	MFE	MILLER INT'L	TEXAS	TT	107	90	6,204	.18
McCOOK	MCK	McCOOK MUNI.	NEBR.	FL	2,579	92	6,000	.55
MEDFORD	MFR	MEDFORD-JACKSON CO.	ORE.	RW	1,330	89	6,700	.54
MEMPHIS	MEM	MEMPHIS INT'L	TENN.	AL,FL,TT,SO,PI	331	91	9,320	.45
MENOMINEE	MNM	MENOMINEE CO.	MICH.	NC	621	75	5,110	.32
MERIDIAN	MEI	KEY FIELD	MISS.	SO	297	93	8,004	.08
MIAMI	MIA	MIAMI INT'L	FLA.	SO	9	90	10,500	0
MIDLAND	MAF	MIDLAND-ODESSA REGIONAL	TEXAS	TT	3,870	94	8,307	.17
MILES CITY	MLS	MILES CITY	MONT.	FL	2,628	90	6,313	.07
MILWAUKEE	MKE	GEN. MITCHEL FIELD	WISC.	NC,OZ	722	79	9,916	.41
MINNEAPOLIS/ST.PAUL	MSP	MINNEAPOLIS-ST PAUL INT'L	MINN.	OZ,NC,AL	840	84	10,000	.28
MINOT	MOT	MINOT INT'L	N.D.	NC,FL	1,715	81	6,276	.48
MISSOULA	MSO	JOHNSON-BELL FIELD	MONT.	FL	1,302	90	6,700	.11
MITCHELL	MHE	MITCHELL MUNI.	S.D.	NC	1,302	90	6,700	.11
MOBILE	MOB	BATES FIELD	ALA.	SO	218	91	6,800	.09
MOLINE	MLI	QUAD-CITY	ILL.	OZ	589	88	6,505	.12
MONROE	MLU	MONROE MUNI.	LA.	SO,TT	79	94	6,000	.05
MONTEREY	MRY	MONTEREY PENINSULA	CALIF.	RW	244	75	6,600	1.39
MONTERREY	MTY	MONTERREY INT'L	MEXICO	TT	1,474	-	6,596	.
MONTGOMERY	MGM	DANNELLY FIELD	ALA.	SO	221	92	9,000	.3
MONTROSE	MTJ	MONTROSE COUNTY	COLO.	FL	5,759	91	6,999	.76
MORGANTOWN	MGW	MORGANTOWN MUNI-W.L.B HT	W.VA.	AL	1,248	86	5,200	.15
MOULTRIE/THOMASVLE	MGR	MOULTRIE-THOMASVILLE	GA.	SO	294	93	5,127	.49
MOUNT VERNON	MVN	MT VERNON-OUTLAND	ILL.	OZ	480	89	5,835	.05
MUNCIE	MIE	DELAWARE CO.-JOHNSON FLD	IND.	AL	937	87	5,156	.09
MUSCLE SHOALS	MSL	MUSCLE SHOALS	ALA.	SO	550	91	5,996	.18
MUSKEGON	MKG	MUSKEGON CO.	MICH.	NC	628	80	6,501	.08
MUSKOGEE	MKO	DAVIS FIELD	OKLA.	FL	610	95	7,200	.36
MYRTLE BEACH	CRE	MYRTLE BEACH	S.C.	PI	33	88	5,996	.04
NASHVILLE	BNA	NASHVILLE METRO.	TENN.	OZ,PI,AL,SO	597	91	8,000	.29
NATCHEZ	HEZ	HARDY-ANDERS FIELD	MISS.	SO	272	93	5,000	.20
NEWARK	EWR	NEWARK INT'L	N.J.	PI,AL,SO	18	84	9,800	.01
NEW BERN	EWN	SIMMONS NOTT	N.C.	PI	19	90	4,807	.06
NEW ORLEANS	MSY	NEW ORLEANS INT'L	LA.	TT,SO	4	91	9,227	.01
NEW YORK	JFK	J.F. KENNEDY INT'L	N.Y.	AL	12	85	14,572	0
NEW YORK	LGA	LA GUARDIA	N.Y.	NC,OZ,PI,AL.SO	21	85	7,000	.07

U.S. REGIONAL AIRLINES
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	ELEVATION(FT)	NORMAL MAX TEMP(°F)	EXISTING RUNWAY LENGTH(FT)	GRADIENT (SLOPE)
NEWPORT NEWS	PHF	PATRICK HENRY	VA.	PI,AL	41	86	8,003	.07
NORFOLK	OFK	KARL STEFAN MEM'L	NEBR.	NC	1,571	89	5,800	.36
NORFOLK	ORF	NORFOLK REGIONAL	VA.	RW	27	86	6,000	.12
NORTH BEND	OTH	NORTH BEND MUNI.	ORE.	RE	14	67	5,045	.09
NORTH PLATTE	LBF	LEE BIRD FIELD	NEBR.	FL	2,779	88	6,600	.09
OAKLAND	OAK	METROPOLITAN OAKLAD INTL	CALIF.	RW,PSA,XK	6	74	10,000	.01
OGDENSBURG	OGS	OGDENSBURG INT'L	N.Y.	AL	297	81	5,200	.21
OKLAHOMA CITY	OKC	WILL ROGERS WORLD	OKLA.	FL	1,294	94	9,802	.13
OLYMPIA	OLM	OLYMPIA	WASH.	RW	205	80	5,974	.24
OMAHA	OMA	EPPLEY AIRFIELD	NEBR.	NC,OZ,FL	983	90	8,501	.07
ONTARIO	ONT	ONTARIO INT'L	CALIF.	RW	952	91	9,982	.16
ONTARIO	ONO	ONTARIO MUNI	ORE.	RW	2,189	96	4,531	.09
ORLANDO	MCO	MCCOY AFB	FLA.	SO	96	92	12,000	.01
OSHKOSH	OSH	WITTMAN FIELD	WISC.	NC	795	84	6,700	.23
OTTUMWA	OTM	OTTUMWA INDUSTRIAL	IOWA	OZ	845	86	6,500	.16
OWENSBORO	OWB	OWENSBORO-DAVIESS CO.	KY.	OZ	407	90	6,498	.12
OXNARD	OXR	VENTURA CO.	CALIF.	RW	43	75	5,950	.19
PADUCAH	PAH	BARKLEY	KY.	OZ	410	92	6,504	.46
PAGE	PGA	PAGE	ARIZ	RW	4,310	97	5,499	1.22
PALM SPRINGS	PSP	PALMS SPRINGS MUNI.	CALIF	RW,XK	448	109	7,004	.76
PALMDALE	PMD	PALMDALE	CALIF.	RW	2,542	100	12,002	.28
PANAMA CITY	PFN	PANAMA CITY-BAY CO.	FLA.	SO	20	88	6,004	.18
PARIS	PRX	COX FIELD	TEXAS	FL	547	95	4,624	.17
PARKERSBURG	PKB	WOOD CO.AIRPORTG.R.WLS	FDW.VA.	PI,AL	858	86	5,100	.73
PARSONS	PPF	TRI CITY	KAN.	FL	899	93	5,687	.60
PASCAGAGOULA	MOB	MOBILE ALABANA		SO				
PASCO	PSC	TRI-CITY	WASH.	RW	406	92	5,804	.12
PASO ROBLES	PRB	PASO ROBLES MUNI	CALIF	RW	836	95	6,009	.18
PELLSTON	PLN	EMMET CO.	MICH.	NC	720	79	6,513	.13
PEORIA	PIA	GREATER PEORIA	ILL.	OZ	660	86	7,000	.37
PHILADELPHIA	PHL	PHILADELPHIA INT'L	PA.	AL	23	88	10,500	.12
PHILADELPHIA	PNE	NORTH PHILADELPHIA	PA	AL	120	85	7,000	.10
PHILIPSBURG	PSB	MID-STATE	PA.	AL	1,948	79	5,711	.66

U.S. REGIONAL AIRLINES
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USERS AIRLINES	ELEVATION(FT)	NORMAL MAX TEMP(°F)	EXISTING RUNWAY LENGTH(FT)	GRADIENT (SLOPE)
PHOENIX	PHX	PHOENIX SKY HARBOR INT'L	ARIZ	FL,RW	1,128	106	10,300	.15
PIERRE	PIR	PIERRE MUNI.	S.D.	NC	1,742	89	6,894	.13
PINE BLUFF	PBF	GRIDER FIELD	ARK.	TT	206	94	5,100	.1
PITTSBURGH	PIT	GREATER PITTSBURGH INT'L	PA.	AL	1,203	83	10,500	.38
PLATTSBURGH	PLB	CLINTON CO.	N.Y.	AL	371	82	5,000	.40
POCATELLO	PIH	POCATELLO MUNI	IDAHO	RE	4,448	89	8,347	.1
PONCA CITY	PNC	PONCA CITY MUNI	OKLA.	FL	1,007	95	4,800	.13
PORTLAND	PDX	PORTLAND INT'L	ORE.	RE	26	79	8,800	.02
PROVIDENCE	PVD	THEODORE F. GREE STATE	R.I.	AL	56	82	6,465	.12
PUERTO VALLARTA	PVR	LIC. GUSTAVO DIAZ ORDAZ	MEX.	RW	10	79	9,020	.
PUEBLO	PUB	PUEBLO MEMORIAL	COLO.	FL	4,726	92	10,497	.23
PULLMAN	PUW	PULLMAN/MOSCOW REGIONAL	WASH.	RW	2,551	83	6,731	.40
QUINCY	UIN	QUINCY MUNI-BALDWIN FLD.	ILL.	OZ	769	86	7,098	.08
RALEIGH/DURHAM	RDU	RALEIGH-DURHAM	N.C.	PI	436	90	7,500	.48
RAPID CITY	RAP	RAPID CITY REGIONAL	S.D.	NC,FL	3,182	88	7,422	.56
READING	RDG	READING MUNI.	PA.	AL	343	85	6,350	.19
REDDING	RDD	REDDING MUNI	CALIF.	RW	500	85	6,996	.36
REDMOND	RDM	ROBERTS FIELD	ORE.	RW	3,077	85	6,996	.36
RENO	RNO	RENO INT'L	NEV.	RW	4,411	92	9,000	.13
RHINELANDER	RHI	RHINELANDER-ONEIDA CO.	WISC.	NC	1,608	80	5,600	.16
RICHMOND	RIC	RICHMOND EVELYN BYRD INT	VA.	PI	168	87	9,000	.09
RIVERTON	RIW	RIVERTON MUNI.	WYO.	FL	5,509	89	7,621	1.0
ROANOKE	ROA	ROANOKE MUNI.	VA.	PI	1,175	86	5,900	.31
ROCHESTER	RST	ROCHESTER MUNI.	MINN.	OZ,NC	1,316	84	7,534	.40
ROCHESTER	ROC	ROCHESTER-MONROE CO.	N.Y.	AL	560	83	8,000	.41
ROCK SPRING	RKS	ROCK SPRINGS-SWEETWATER	WYO.	FL	6,747	83	6,688	.28
ROCKFORD	RFD	GREATER ROCKFORD	ILL.	OZ	736	85	8,198	.33
ROCKY MOUNT/WILSON	RWI	ROCKY MOUNT-WILSON	N.C.	PI	158	91	5,999	.16
ROSWELL	ROW	ROSWELL INDUSTRIAL AIR C	N.M.	TT	3,669	93	13,00	.30
RUTLAND	RUT	RUTLAND STATE	VT.	AL	787	80	5,000	.24
SCRAMENTO	SMF	SCRAMENTO METRO.	CALIF	RW,PSA,XK	23	92	8,600	.03
SAGINAW	MBS	TRI CITY	MICH.	NC	667	83	6,501	.20
ST. LOUIS	STL	LAMBERT-ST LOUIS INT'L	MO.	OZ,AL,FL,SO	589	90	10,018	.41
SALINA	SLN	SALINA MUNI	KAN.	FL	1,272	94	13,331	.19
SALISBURY	SBY	SALISBURY-WICOMICO CO.	MD.	AL	51	77	5,500	.14
SALT LAKE CITY	SLC	SALT LAKE CITY INT'L	UTAH	FL,TT,RW	4,226	92	10,000	.09

U.S. REGIONAL AIRLINES
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	ELEVATION(FT)	NORMAL MAX TEMP(°F)	EXISTING RUNWAY LENGTH(FT)	GRADIENT (SLOPE)
SAN ANGELO	SJT	MATHIS FIELD	TEXAS	TT	1,915	98	6,920	.32
SAN ANTONIO	SAT	SAN ANTONIO INT'L	TEXAS	TT	809	94	8,500	.35
SAN FRANCISCO	SFO	SAN FRANCISCO INT'L	CALIF.	RW,PSA,XK	10	74	10,600	.06
SAN JOSE	SJC	SAN JOSE MUNI	CALIF.	RW,PSA,XK	56	81	8,900	.29
SANTA ANA	SNA	ORANGE CO.	CALIF.	RW,XK	54	86	5,700	.28
SANTA BARBARA	SBA	SANTA BARBARA MUNI	CALIF.	RW	10	74	6,048	.02
SANTA FE	SAF	SANTA FE CO. MUNI.	N.M.	FL	6,344	85	8,322	.81
SANTA ROSA	STS	SONOMA CO.	CALIF.	RW	125	81	5,003	.16
SARINAC LAKE	SLK	ADIRONDACK	N.Y.	AL	1,659	77	5,000	.33
SAULT ST. MARIE	SSM	SAULT STE MARIE MUNI.	MICH.	NC	720	75	5,000	.41
SCOTTSBLUFF	BFF	SCOTTSBLUFF CO.	NEBR.	FL	3,965	90	8,280	.22
SEATTLE	SEA	SEATTLE-TACOMA INT'L	WASH.	RW	428	76	11,900	.72
SHELBYVILLE	SYI	SHELBYVILLE MUNI-BO MAR	TENN.	SO	800	89	5,003	.15
SHREVEPORT	SHV	SHREVEPORT REGIONAL	LA.	TT	257	94	7,300	.55
SIDNEY	SDY	SIDNEY-RICHLAND MUNI.	MONT.	FL	1,983	84	5,705	.11
SILVER CITY	SVC	SILVER CITY & GRANT CO.	N.M.	FL	5,443	89	6,408	.19
SIOUX CITY	SUX	SIOUX CITY MUNI.	IOWA	NC, OZ	1,097	87	9,000	.09
SOUTH BEND	SBN	ST. JOSEPT CO.	IND.	NC,AL	785	84	6,000	.23
SPOKANE	GEG	SPOKANE INT'L	WASH.	RW	2,372	82	9,000	.61
SPRINGFIELD	SPI	CAPITAL	ILL.	OZ	597	84	7,999	.13
SPRINGFIELD	SGF	SPRINGFIELD MUNI.	MO.	OZ	1,267	88	6,500	.10
PHILIPSBURG	PSB	MID-STATE	PA.	AL	1,948	79	5,711	.66
STAUNTON	SHD	SHENANDOAH VALLEY	VA.	PI	1,201	74	6,002	.42
STERLING	SQI	WHITESIDE CO.	ILL.	OZ	647	88	6,501	.09
STILLWATER	SWO	SEARCY FIELD	OKLA.	FL	984	95	5,000	.3
STOCKTON	SCK	STOCKTON METRO.	CALIF.	RW,PSA	29	93	8,650	.05
SYRACUSE	SYR	SYRACUSE HANCOCK INT'L	N.Y.	AL	421	83	9,005	.22
TALLAHASSEE	TLH	TALLAHASSEE MUNI.	FLA.	SO	81	91	6,071	.39
TEMPLE	TPL	DRAUGHON-MILLER MUNI	TEXAS	TT	682	97	6,300	.22
TERRE HAUTE	HUF	HULMAN FIELD	IND.	AL	585	88	9,025	.12
TEXARKANA	TXK	TEXARKANA MUNI.	ARK.	TT	389	95	6,601	.72
THIEF RIVER FALLS	TVF	THIEF RIVER FALLS MUNI.	MINN	NC	1,116	80	5,100	.03
THUNDER BAY	YQT		ONT.	NC	653		6,200	
TOLEDO	TOL	TOLEDO EXPRESS	OHIO	AL	684	84	8,700	.11
TOPEKA	TOP	PHILIP BILLARD MUNI.	KAN	FL	880	90	5,100	.10
TORONTO	YYZ	TORONTO INT'L	ONT.	NC,AL	10	73	11,050	.23

U.S. REGIONAL AIRLINES
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	ELEVATION(FT)	NORMAL MAX TEMP(F°)	EXISTING RUNWAY LENGTH(FT)	GRADIENT (SLOPE)
TRAVERSE CITY	TVC	CHERRY CAPITAL	MICH.	NC	624	80	6,500	.28
TRENTON	TTN	MERCER CO.	N.J.	AL	213	84	5,999	.49
TUCSON	TUS	TUCSON INT'L	ARIZ	FL,RW	2,630	99	12,000	.63
TULSA	TUL	TULSA INT'L	OKLA.	OZ,FR	676	93	10,000	.23
TUPELO	TUP	C.D. LEMONS MUNI.	MISS.	SO	361	92	42,00	.17
TUSCALOOSA	TCL	TUSCALOOSA MUNI.	ALA.	SO	169	93	6,499	.17
TWINS FALLS	TWF	TWIN FALLS CITY-CO	IDAHO	RW	4,150	89	7,149	.17
TYLER	TYR	POUNDS FIELD	TEXAS	TT	544	96	5,200	.56
OXFORD	UOX	UNIVERSITY-OXFORD	MISS.	SO	451	92	4,700	.81
UTICA	UCA	ONEIDA CO.	N.Y.	AL	742	85	6,000	.56
VALDOSTA	VLD	VALDOSTA MUNI.	GA.	SO	204	92	5,600	.13
VERNAL	VEL	VERNAL	UTAH	FL	5,281	89	6,605	.20
VICTORIA	VCT	VICTORIA CO-FOSTER	TEXAS	TT	115	93	10,331	.12
WACO	ACT	WACO MUNI.	TEXAS	TT	516	97	6,597	.15
WALLA WALLA	ALW	WALLA WALLA CITY CO.	WASH.	RW	1,205	91	7,188	.64
WENATCHEE	EAT	PANGBORN FIELD	WASH.	RW	1,245	88	5,500	.30
WASHINGTON	DCA	WASHINGTON NATIONAL	D.C.	PI,AL	15	87	6,870	.03
WASHINGTON	IAD	DULLES INT'L	DC.	OZ,PI,SO	313	87	11,500	.16
WATERLOO	ALO	WATERLOO MUNI.	IOWA	OZ	873	85	8,400	.08
WATERTOWN	ART	WATERTOWN N.Y. INT'L	N.Y.	AL	325	80	5,000	.26
WATERTOWN	ATY	WATERTOWN MUNI.	S.D.	NC	1,748	83	6,899	.19
WAUSAU/MOSINEE	CWA	CENTRAL WISCONSIN	WISC.	NC	1,274	80	6,699	.24
WHITE PLAINS	HPN	WESTCHESTER CO.	N.Y.	AL	439	85	6,550	.06
WICHITA	ICT	WICHITA MUNI.	KAN.	FL	1,332	93	7,300	.01
WILKES-BARRE	AVP	WILKES-BARRE-SCRANTON	PA.	AL	956	83	6,450	.70
WILLIAMSPORT	IPT	WILLIAMSPORT-LYCOMING CO.	PA	AL	529	85	6,449	.19
WILLISTON	ISN	SLOULIN FIELD INT'L	N.D.	FL	1,957	86	6,041	1.25
WILMINGTON	ILG	GREATER WILMINGTON	DE.	AL	79	86	7,200	.14
WILMINGTON	ILM	NEW HANOVER CO.	N.C.	PI	31	89	8,000	.11
WINSLOW	INW	WINSLOW MUNI.	ARIZ.	FL	4,938	97	7,500	.80
WINSTON SALEM	INT	SMITH REYNOLDS	N.C.	PI	940		6,654	1.0
WOLF POINT	OLF	WOLF POINT INT'L	MONT.	FL	1,985	88	5,100	.04
WORCHESTER	ORH	WORCHESTER MUNI.	MASS.	AL	1,009	80	7,005	.36
WORLAND	WRL	WORLAND MUNI.	WYO	FL	4,245	90	7,004	.93

U.S. REGIONAL AIRLINES
AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	ELEVATION(FT)	NROMAL MAX TEMP(°F)	EXISTING RUNWAY LENGTH(FT)	GRADIENT (SLOPE)
WORTHINGTON	OTG	WORTHINGTON MUNI.	MINN.	NC	1,574	83	5,000	.14
YAKIMA	YKM	YAKIMA AIR TERMINAL	WASH.	RW	1,089	87	6,607	.68
YANKTON	YKN	CHAN GURNEY MUNI.	S.D.	NC	1,303	88	5,400	.62
YOUNGSTOWN	YNG	YOUNGSTOWN MUNI.	OHIO	AL	1,196	83	7,493	.88
YUMA	YUM	YUMA MCAS/YUMA INT'L	ARIZ.	RW	213	107	13,300	.07
BLUEFIELD	BLF	MERCER CO.	W.VA.	PI	2,857	87	4,743	.30
CALGARY	YYC	CALGARY INT'L	ALTA.	RW	3,557	66	12,700	.11
CROSSVILLE	CSV	CROSSVILLE MEMORIAL	TENN.	SO	1,881	85	5,419	.28
GLENS FALLS	GFL	WARREN CO.	N.Y.	AL	328	88	5,007	.10
JAMES TOWN	JHW	CHAUTAUQUA CO.	N.Y.	AL	1,723	83	5,300	.25
KEENE	EEN	DILLANT-HOPKINS	N.H.	AL	487	82	6,502	.27
KINGMAN	IGM	KINGMAN MUNI	ARIZ.	RW	3,446	98	6,830	.25
LAKE HAVASU CITY	LHU	LAKE HAVASU CITY	ARIZ.	RW	482	108	6,434	.05
LAKE OF THE OZARKS	AIZ	KAISER/LAKE OZARK	MO.	OZ	869	91	6,500	.09
MEXICO CITY	MEX	LIC. BENITO JUAREZ	MEXICO	TT	7,340	73	10,824	.
MONTREAL	YUL	MONTREAL INT'L	QUE	AL	117	73	11,000	.09
NEW HAVEN	HVN	TWEED-NEW HAVEN	CONN.	AL	13	81	5,600	.16
NEW LONDON	GON	TRUMBULL	CONN.	AL	10	81	5,000	.04
SAN DIEGO	SAN	SAN DIEGO INT'L	CALIF.	RW,PSA,XK	15	77	9,400	.02
HAYDEN	HDN	YAMPA VALLEY	COLO	FL	6,595	86	7,000	.02
WEST YELLOWSTONE	WYS	YELLOWSTONE ARPT	MONT	FL	5,644	80	8,401	.17

TABLE B-19

U.S. REGIONAL AIRLINES
CORRECTED AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	EXISTING RUNWAY LENGTH (FT)	CORRECTED LENGTH (85% RELIABILITY)(FT)
ALAMOSA	ALS	ALAMOSA, MUNI	COLO	FL	7,872	4,349
ALTOONA/MARTINSBURG	AOO	BLAIR CO.	PA	AL	5,465	4,225
ANDERSON	AND	ANDERSON CO.	S.C.	SO	5,001	4,122
ANNISTON	ANB	ANNISTON-CALHOUN CO.	ALA	SO	5,009	4,126
APPLE VALLEY	APV	APPLE VALLEY NEW	CAL	RW	6,498	3,929
ATHENS	AHN	ATHENS MUNI	GA	SO	4,992	3,817
BECKLEY	BKW	RALEIGH CO. MEM'L	W. VA.	PI	5,000	3,607
BENTON HARBOR	BEH	ROSS FIELD	MICH	NC	5,107	4,412
BIG SPRING	HCA	HOWARD CO.	TEX	TT	5,494	3,731
BLOOMINGTON	BMG	MONROE CO.	IND	AL	5,202	4,361
BRAINERD	BRD	BRAINERD-CROW WING CO.	MINN	NC	5,000	4,283
BRIDGEPORT	BDR	IGOR SIKORSKI MEM'L	CONN	AL	4,761	4,423
BROOKINGS	BKX	BROOKINGS MUNI	S.D.	NC	5,431	4,258
BROWNWOOD	BWD	BROWNWOOD MUNI	TEXAS	TT	5,598	4,223
CEDAR CITY	CDC	CEDAR CITY MUNI	UTAH	RW	6,100	3,506
CHADRON	CDR	CHADRON MUNI	NEB	FL	6,000	4,063
CLARKSBURG	CKB	BENEDUM	W. VA.	AL	5,200	4,460
CLARKSVILLE	CKV	OUTLAW FIELD	TENN	OZ	5,000	4,058
CODY	COD	CODY MUNI	WYO	FL	7,107	4,360
COLLEGE STATION	CLL	EASTWOOD FIELD	TEX	TT	5,161	4,341
COLUMBUS	OLU	COLUMBUS MUNI	NEB	FL	5,002	4,025
CORTEZ	CEZ	CORTEZ-MONTEZUMA CO.	COLO	FL	7,205	4,279
DANVILLE	DNV	VERMILLION CO.	ILL	AL	5,400	4,278
DANVILLE	DAN	DANVILLE MUNI	VA	PL	5,000	4,123
DUBOIS	DUJ	DUBOIS-JEFFERSON CO.	PA	AL	5,505	4,419
DURANGO	DRO	DURANGO-LA PLATA CO.	COLO	FL	8,000	4,244
ELDORADO/CAMDEN	ELD	GOODWIN FIELD	ARK	TT	5,099	4,304
ELKINS	EKN	ELKINS-RANDOLPH CO.	W. VA.	AL	4,542	3,282
FAIRMONT	FRM	FAIRMONT MUNI	MINN	NC	5,002	4,146
FLAGSTAFF	FLG	PULLIAM	ARIZ	FL	7,000	3,895
FORT DODGE	FOD	FORT DODGE MUNI	IOWA	OZ	4,400	3,534

U.S. REGIONAL AIRLINES
CORRECTED AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	EXISTING RUNWAY LENGTH (FT)	CORRECTED LENGTH (85% RELIABILITY) (FT)
FORT LEONARDWOOD	TBN	FORNEY AAF	MO	OZ,FL	5,037	4,085
FRANKLIN	FKL	CHESS-LAMBERTON	PA	AL	5,200	4,154
GADSDEN	GAD	GADSDEN	ALA	SO	4,815	3,993
GARDEN CITY	GCK	GARDEN CITY MUNI	KAN	FL	6,000	4,241
GLENDIVE	GDV	DAWSON COMMUNITY	MONT	FL	5,700	4,266
GOLDSBORO	GSB	GOLDBORO-WANE MUNI	NC	PI	3,698	3,310
GOODLAND	GLD	RENNERFIELD/GOODLAND MUNI	KAN	FL	5,500	3,683
GREENBRIER/LEWISBURG	LWD	GREENBRIER VALLEY	W. VA.	PL	6,000	4,395
GREENWOOD	GWO	GREENWOOD-LE FLORE	MISS	SO	4,996	4,301
GREENWOOD	GRD	GREENWOOD CO.	SC	SO	5,212	4,296
GUNNISON	GUC	GUNNISON CO.	COLO	FL	7,200	3,869
HASTINGS	HSI	HASTINGS MUNI	NEBR	FL	5,600	4,200
HAVRE	HVR	HAVRE CITY CO.	MONT	FL	5,200	3,920
HAYS	HYS	HAYS MUNI	KAN	FL	5,700	4,298
HAZLETON	HZL	HAZLETON MUNI	PA	AL	4,900	4,398
HOT SPRINGS	HSP	INGALLS FIELD	VA	PI	5,602	3,706
HUNTINGTON	HTS	TRI-STATE/WALKER-LONG FIELD	W. VA	PI,AL	5,281	4,498
HURON	HON	W.W. HOWES MUNI	S.D.	NC	5,100	4,227
INTERNATIONAL FALLS	INL	FALLS INTERNATIONAL	MINN	NC	5,008	4,289
JACKSON	JXN	REYNOLDS MUNI	MICH	NC	5,278	4,459
JACKSON	JAC	JACKSONS HOLE	WYO	FL	6,305	3,589
JOHNSTOWN	JST	JOHNSTOWN-CAMBRIA CO.	PA	AL	5,488	4,123
KALAMAZOO	AZO	KALAMAZOO MUNI	MICH	NC	5,300	4,491
LAMAR	LAA	LAMAR MUNI	COLO	FL	6,300	4,071
LARAMIE	LAR	GENERAL BREES FIELD	WYO	FL	7,700	4,328
LAUREL	LUL	LAUREL MUNI	MISS	SO	5,012	4,303
LEWISTON	LWT	LEWISTON MUNI	MONT	FL	5,630	3,558
LIMA	LIA	LIMA	OHIO	AL	3,500	3,025
LUFKIN	LFK	ANGELINA CO.	TEXAS	TT	4,805	3,940
MANHATTAN	MHK	MANHATTAN MUNI	KAN	FL	5,500	4,459
MANITOWOC	MTW	MANITOWOC MUNI	WISC	NC	5,000	4,432
MC COOK	MCK	MC COOK MUNI	NEBR	FL	6,000	4,222
MENOMINEE	MNM	MENOMINEE CO.	MICH	NC	5,110	4,472
MONTROSE	MTJ	MONTROSE CO.	COLO.	FL	6,999	3,936

U.S. REGIONAL AIRLINES
CORRECTED AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	EXISTING RUNWAY LENGTH (FT)	CORRECTED LENGTH (85% RELIABILITY)(FT)
MORGANTOWN	MGW	MORGANTOWN MUNI-W.L.S. HART	W. VA	AL	5,200	4,275
MOULTRIE/THOMASVILLE	MGR	MOULTRIE-THOMASVILLE	GA	SO	5,127	4,237
MUNCIE	MIE	DELAWARE CO.-JOHNSON FLD.	IND	AL	5,156	4,333
NATCHEZ	HEZ	HARDY-ANDERS FLD.	MISS	SO	5,000	4,220
NEW BERN	EWN	SIMMONS NOTT	N.C.	PI	4,807	4,279
ONTARIO	ONO	ONTARIO MUNI	ORE	RW	4,531	3,450
PAGE	PGA	PAGE	ARIZ	RW	5,499	3,341
PARIS	PRX	COX FIELD	TEXAS	FL	4,624	3,810
PARKERSBURG	PKB	WOOD CO.-G.R. WILSON FIELD	W. VA.	PI,AL	5,100	4,180
PARSONS	PPF	TRI CITY	KAN.	FL	5,687	4,483
PHILIPSBURG	PSB	MID-STATE	PA	AL	5,711	4,268
PINE BLUFF	PBF	GRIDER FIELD	ARK	TT	5,100	4,430
PLATTSBURGH	PLB	CLINTON CO.	N.Y.	AL	5,000	4,414
PONCA CITY	PNC	PONCA CITY MUNI	OKLA	FL	4,800	3,839
RIVERTON	RIW	RIVERTON MUNI	WYO	FL	7,621	4,317
ROCK SPRINGS	RKS	ROCK SPRINGS-SWEETWATER CO.	WYO	FL	6,688	3,824
RUTLAND	RUT	RUTLAND STATE	VT	AL	5,000	4,329
SANTA ROSA	STS	SONOMA CO.	CALIF	RW	5,003	4,170
SARINAC LAKE	SLK	ADIRONDAK	NY	AL	5,000	4,036
SAULT ST. MARIE	SSM	SAULT ST. MARIE MUNI	MICH	NC	5,000	4,406
SHELBYVILLE	SYI	SHELBYVILLE MUNI	TENN	SO	5,003	4,115
SIDNEY	SDY	SIDNEY-RICHLAND MUNI	MONT	FL	5,705	4,422
SIDNEY	SNY	SIDNEY MUNI	NEBR	FL	6,600	4,210
STILLWATER	SWO	SEARCY FIELD	OKLA	FL	5,000	3,941
THIEF RIVER FALLS	TVF	THIEF RIVER FALLS MUNI	MINN	NC	5,100	4,471
TOPEKA	TOP	PHILIP BILLARD MUNI	KAN	FL	5,100	4,207
TUPELO	TUP	C.D. LEMONS MUNI	MISS	SO	4,200	3,530
TYLER	TYR	POUNDS FIELD	TEXAS	TT	5,200	4,144
OXFORD	UOX	UNIVERSITY-OXFORD	MISS	SO	4,700	3,687
VERNAL	VEL	VERNAL	UTAH	FL	6,605	4,027
WENATCHEE	EAT	PANGBORN FIELD	WASH	RW	5,500	4,456
WATERTOWN	ART	WATERTOWN N.Y.	NY	AL	5,000	4,290
WILLISTON	ISN	SLOULIN FIELD INT'L	ND	FL	6,041	4,394
WINSLOW	INW	WINSLOW MUNI	ARIZ	FL	7,500	4,344
WOLF POINT	OLF	WOLF POINT	MONT	FL	5,100	4,053

U.S. REGIONAL AIRLINES
CORRECTED AIRPORT DATA
(1972)

CITY	CODE	NAME	STATE	USER AIRLINES	EXISTING RUNWAY LENGTH (FT)	CORRECTED LENGTH (85% RELIABILITY)(FT)
WORLAND	WRL	WORLAND MUNI	WYO	FL	7,004	4,293
YANKTON	YKN	CHAN GURNEY MUNI	SD	NC	5,400	4,282
BLUEFIELD	BLF	MERCER CO.	W. VA.	PI	4,743	3,363
CROSSVILLE	CSV	CROSSVILLE MEM'L	TENN	SO	5,419	4,128
JAMESTOWN	JHW	CHAUTAUQUA CO.	NY	AL	5,300	4,192
HAYDEN	HDN	YAMPA VALLEY	COLO	FL	7,000	4,000

APPENDIX C - ECONOMICS

C.1 COMMERCIAL AIRCRAFT PRODUCTION AND DEVELOPMENT COST ESTIMATES

Table C-1, "Basepoint Design Aircraft Cost Estimates", lists the essential input factors to the CAPDEC on the first page. Also shown are estimates of components of the development cost and the total amount in millions of dollars. The data shown are for the 50 passenger, 850 nautical mile range basepoint aircraft created in the design study phase. The second page presents unit, cumulative and average costs as a function of numbers of aircraft produced. The 400th pricing unit is underlined.

TABLE C-1

JR JET - SEPTEMBER 12
RUN 4

BASEPOINT DESIGN AIRCRAFT COST ESTIMATES

	USER INITIALIZED	USER	PARAMETRIC	INPUT	DATA		
26	MFG WT EMPTY - 1000 LB	=	26.685	27	ROLLING ASSEMBLY WT - 1000 LB (4)	=	0.765
29	WEIGHT PER ENGINE	=	1.685	32	AVIONICS FLAG (3)	=	0.0
33	AVIONICS WEIGHT - 1000 LB (11)	=	0.436	34	AVIONICS COST - $M (11,14)	=	0.125
37	HIGH SPEED CRUISE (MACH NO)	=	0.680	18	HOURLY COST ESCAL. PERCENT/YR (9,13)	=	6.000
19	MATERIAL COST ESCAL. - PERCT/YR (9,13)	=	5.000	24	AIRLINE PRE-PAYMENT - YES=0, NO=1	=	1.000
40	TECHNICAL FACTOR - ENGINEERING (1)	=	0.605	41	TECHNICAL FACTOR - TOOLING (1)	=	0.745
42	TECHNICAL FACTOR - FLIGHT TEST (1)	=	0.636	43	TECHNICAL FACTOR - DEV. SUPPORT (1)	=	0.536
46	TECHNICAL FACTOR - PERM. MFG LABOR (1)	=	0.836	47	TECHNICAL FACTOR - MATERIALS (1)	=	0.814
8	PROFIT - PERCENT OF TOTAL COST	=	10.000	14	PRICING UNIT (INCLUDES PROFIT) (8)	=	400.000
31	ENGINE COST - $M (12,14)	=	0.341	23	CONSTANT DOLLAR YEAR (NO = 0) (18)	=	1974.500

THIS IS A SINGLE NEW AIRCRAFT PROGRAM

AIRFRAME DEVELOPMENT COSTS *

(MILLIONS OF DOLLARS)

INITIAL ENGINEERING	INITIAL TOOLING	DEVELOPMENT SUPPORT	TEST FLIGHT	PROGRAM LAB	EXTRODINARY DEVELOPMENT	TOTAL
30.34	31.95	13.83	26.52	6.07	0.0	108.70

* EXCLUDING THRUPUTS, INVESTMENT AND WORKING CAPITAL COSTS, AND PROFITS
COST ESCALATION PRORATED PROPORTIONATELY AMONG THE COST ELEMENTS

JR JET - SEPTEMBER 12
RUN 4

AIRCRAFT COSTS AND PROFITS
******** ***** *** *******
(MILLIONS OF DOLLARS)

PRODUCTION QUANTITY	RATE	CUM COSTS PROD	DEVEL	INTEREST	TOTAL	UNIT COSTS	CUM AV COSTS	REVENUE TOTAL	PROFIT UNIT	CUM AV	TOTAL
1	1.0	7.	109.	14.	129.	0.0	128.79	3.	0.0	-125.60	-126.
3	1.0	25.	109.	15.	148.	9.70	49.39	10.	-6.51	-46.21	-139.
5	1.0	38.	109.	16.	162.	7.13	32.49	16.	-3.95	-29.31	-147.
10	1.0	65.	109.	18.	191.	5.70	19.09	32.	-2.51	-15.91	-159.
20	3.6	106.	109.	27.	242.	5.06	12.08	64.	-1.88	-8.89	-178.
30	4.8	142.	109.	27.	277.	3.55	9.24	95.	-0.37	-6.05	-182.
40	5.7	174.	109.	32.	315.	3.76	7.87	127.	-0.57	-4.68	-187.
50	6.0	204.	109.	37.	350.	3.58	7.01	159.	-0.39	-3.83	-191.
60	8.0	233.	109.	37.	379.	2.87	6.32	191.	0.32	-3.13	-188.
70	8.0	260.	109.	43.	412.	3.30	5.89	223.	-0.12	-2.70	-189.
80	8.0	287.	109.	43.	439.	2.66	5.48	255.	0.53	-2.30	-184.
90	8.0	313.	109.	43.	464.	2.58	5.16	286.	0.60	-1.98	-178.
100	8.0	338.	109.	48.	495.	3.03	4.95	318.	0.15	-1.76	-176.
120	8.0	387.	109.	53.	548.	2.68	4.57	382.	0.51	-1.39	-166.
140	8.0	434.	109.	53.	595.	2.35	4.25	446.	0.84	-1.07	-150.
160	8.0	479.	109.	57.	645.	2.50	4.03	509.	0.68	-0.85	-136.
180	8.0	523.	109.	61.	694.	2.42	3.85	573.	0.76	-0.67	-121.
200	8.0	567.	109.	65.	741.	2.35	3.70	637.	0.83	-0.52	-104.
220	8.0	609.	109.	68.	786.	2.28	3.57	700.	0.90	-0.39	-86.
250	8.0	672.	109.	71.	851.	2.17	3.41	796.	1.01	-0.22	-56.
300	8.0	774.	109.	74.	957.	2.11	3.19	955.	1.08	-0.01	-2.
350	4.0	873.	109.	75.	1057.	2.01	3.02	1114.	1.17	0.16	57.
400	4.0	971.	109.	78.	1158.	2.02	2.90	1273.	1.16	0.29	115.
450	4.0	1068.	109.	81.	1258.	1.99	2.79	1432.	1.19	0.39	175.
500	4.0	1164.	109.	84.	1356.	1.97	2.71	1591.	1.22	0.47	235.
550	4.0	1258.	109.	87.	1454.	1.95	2.64	1751.	1.23	0.54	297.
600	4.0	1353.	109.	89.	1551.	1.95	2.59	1910.	1.23	0.60	358.
650	4.0	1448.	109.	93.	1649.	1.96	2.54	2069.	1.22	0.65	420.
700	4.0	1542.	109.	96.	1747.	1.94	2.50	2228.	1.24	0.69	481.
750	4.0	1637.	109.	98.	1844.	1.94	2.46	2387.	1.24	0.72	543.
800	4.0	1731.	109.	101.	1941.	1.94	2.43	2546.	1.24	0.76	606.
850	4.0	1825.	109.	104.	2038.	1.94	2.40	2705.	1.24	0.79	668.
900	4.0	1919.	109.	107.	2134.	1.94	2.37	2865.	1.25	0.81	730.
950	4.0	2013.	109.	110.	2232.	1.95	2.35	3024.	1.23	0.83	792.

AIRCRAFT DELIVERY - PRICE SCHEDULE

1977 - 94. A/C AT $ 3.18M	1978 - 96. A/C AT $ 3.18M	1979 - 96. A/C AT $ 3.18M	1980 - 76. A/C AT $ 3.18M
CUM - 94. A/C AT $ 3.18M	CUM - 190. A/C AT $ 3.18M	CUM - 286. A/C AT $ 3.18M	CUM - 362. A/C AT $ 3.18M
1981 - 48. A/C AT $ 3.18M	1982 - 48. A/C AT $ 3.18M	1983 - 48. A/C AT $ 3.18M	1984 - 48. A/C AT $ 3.18M
CUM - 410. A/C AT $ 3.18M	CUM - 458. A/C AT $ 3.18M	CUM - 506. A/C AT $ 3.18M	CUM - 554. A/C AT $ 3.18M

C.2 RETURN ON INVESTMENT ANALYSIS

Table C-2 presents the results of an illustrative analysis of ROI with a machine program. The assumptions and input data are listed on the first page. Revenue and cost input data in dollars per mile are shown on the second page. A computed rate of return on investment is reproduced as a series of data points by year is shown in Figure C-1. It was assumed that the aircraft entered service in 1975.

These data sheets are typical of those generated in the ROI of the 30 and 70 passenger medium density basepoint aircraft reported in Section 15.1.

TABLE C-2

BASEPOINT DESIGN AIRCRAFT RETURN ON INVESTMENT

JR JET ***** ROI ***** 50 SEATS, AUGUST 6

AIRCRAFT ASSUMPTIONS

****

DELIVERY DATE 6/1974
ECONOMIC LIFE 15 YEARS

	1 AIRCRAFT	SPARES	GROUND SUPPORT EQUIPMENT
TOTAL PRICE	2990000.	0.	0.
DEPRECIABLE LIFE	15 YEARS	0 YEARS	0 YEARS
RESIDUAL PERCENTAGE	15.0	0.0	0.0
START UP COSTS	37500.		
POSSIBLE I.T.C.	209300.		

DEPRECIATION METHOD (FOR AIRCRAFT) -- STRAIGHT LINE

INCOME TAX RATE 48.0 PERCENT
DISCOUNT RATE FOR NEGATIVE CASH FLOWS 10.0 PERCENT

BLOCK SPEED	319.	319.	319.	319.	319.	319.	319.	319.	319.	319.
	319.	319.	319.	319.	319.					
PASSENGER SEATS PER AIRCRAFT	50.	50.	50.	50.	50.	50.	50.	50.	50.	50.
	50.	50.	50.	50.	50.					
ANNUAL PASSENGER UTILIZATION (HOURS)	2845.	2845.	2845.	2845.	2845.	2845.	2845.	2845.	2845.	2845.
	2845.	2845.	2845.	2845.	2845.					
PASSENGER LOAD FACTOR (PERCENT)	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0	50.0
	50.0	50.0	50.0	50.0	50.0					

FOLDOUT FRAME

FOLDOUT FRAME

JR JET ***** ROI ***** 50 SEATS, AUGUST 6

REVENUE AND COST ASSUMPTIONS

12 MONTHS ENDING	PER RPM YIELD	PER RPM GROWTH RATE	PER MILE DOC	PER MILE GROWTH RATE	PER MILE IOC	PER MILE GROWTH RATE
5/31/75	0.1420		1.2300		2.0500	
5/31/76	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/77	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/78	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/79	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/80	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/81	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/82	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/83	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/84	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/85	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/86	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/87	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/88	0.1420	0.0	1.2300	0.0	2.0500	0.0
5/31/89	0.1420	0.0	1.2300	0.0	2.0500	0.0

DEBT REPAYMENT ASSUMPTIONS

NO COMPUTATIONS REQUESTED FOR THIS CASE

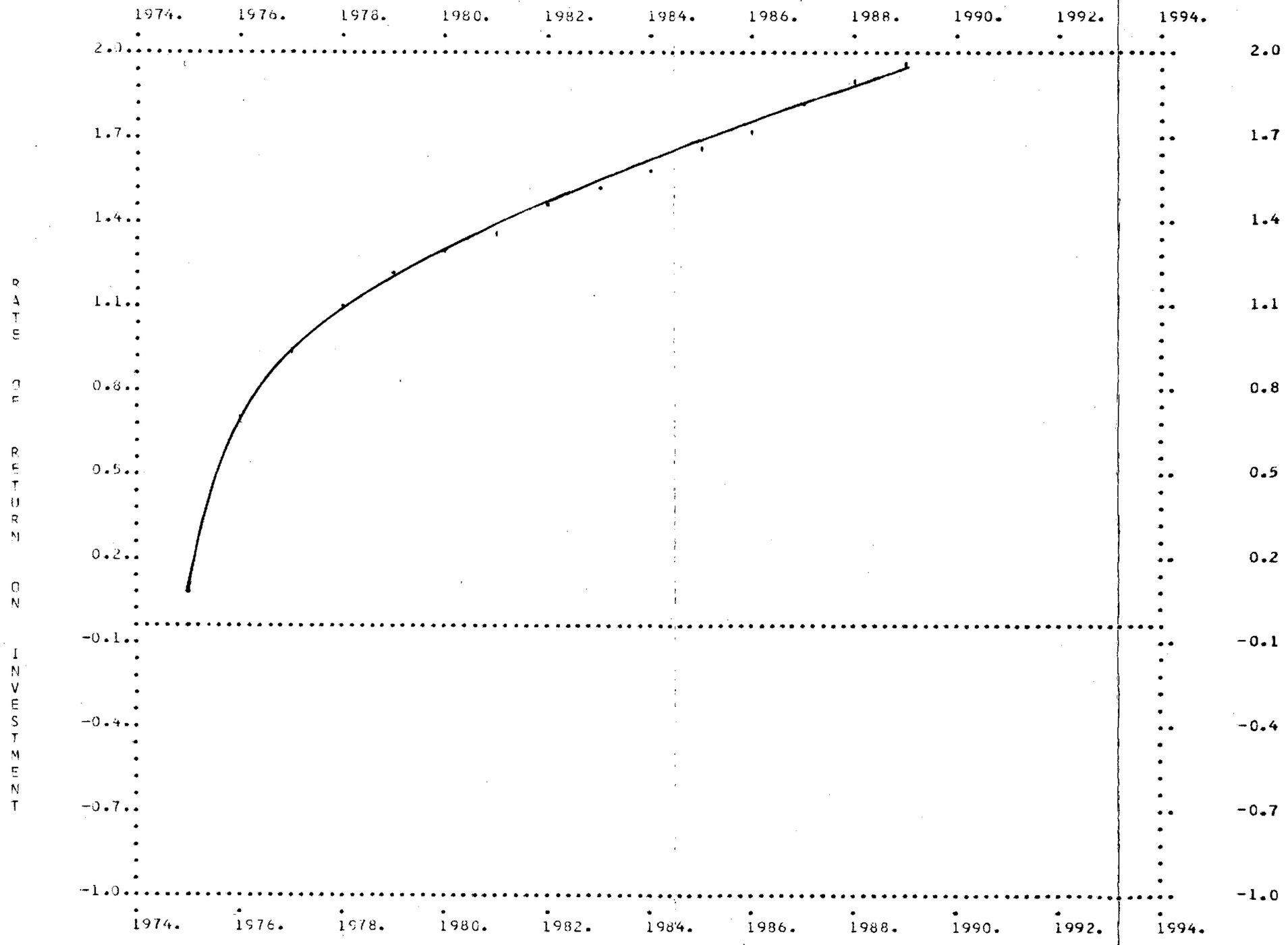


Figure C-1 - RATE OF RETURN BY YEAR - 50 PASSENGER BASEPOINT AIRCRAFT

FOLDOUT FRAME 1

FOLDOUT FRAME 2